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THE PROBLEM OF FUTURE CONTINGENCIES*

ARISTOTLE believed that any statement which asserts or denies, concerning a contingent event, that it is going to occur, is neither true nor false, the world being as yet indeterminate with regard to the existence or nonexistence of such things.[1]

Few doctrines from antiquity have engendered more controversy than this one, as indicated by the rash of polemic that has broken out over it again in the last few years.[2] Medieval philosophers, following Boethius, found in it a thorny problem of reconciling liberty with divine omniscience; Lukasiewicz, more recently, revived Aristotle's arguments to provide an interpretation for his three-valued logic, while other writers still find it necessary to take account of essentially the same arguments in dealing with metaphysical problems of time. Nearly all the Scholastics discarded Aristotle's arguments as inconsistent with Christian presuppositions, while modern logicians have tended to dismiss them as paralogisms. C. A. Baylis rejected all of them, as reinterpreted by Lukasiewicz, as fallacious,[3] and W. V. Quine has disdained one of the conclusions as "Aristotle's fantasy."[4] Applying them to metaphysical puzzles, Gilbert Ryle treats such

* The original version of this was presented at the first meeting of the Society for Ancient Philosophy at Goucher College, December 28, 1954.

[1] *De Int.*, ch. ix.

[2] See C. A. Baylis, "Are Some Propositions neither True nor False?" *Philosophy of Science*, III (1936), 156-166; Donald Williams, "The Sea Fight Tomorrow," in *Structure, Method and Meaning*, ed. by P. Henle, H. M. Kallen, and S. K. Langer (New York, 1951), pp. 280-306; A. N. Prior, "Three-valued Logic and Future Contingents," *Philosophical Quarterly*, III (1953), 317-326; Leonard Linsky, "Professor Donald Williams on Aristotle," *Philosophical Review*, LXIII (1954), 250-252; Donald Williams, "Professor Linsky on Aristotle," *ibid.*, 253-255; Gilbert Ryle, "It Was to Be," in *Dilemmas* (Cambridge, 1954), pp. 15-35; R. J. Butler, "Aristotle's Sea Fight and Three-valued Logic," *Philosophical Review*, LXIV (1955), 264-274; G. E. M. Anscombe, "Aristotle and the Sea Battle," *Mind*, n.s., LXV (1956), 1-15.

[3] *Op. cit.*

[4] "On a So-called Paradox," *Mind*, n.s., LXII (1953), 65.

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arguments as confusions of categories,[5] while Donald Williams has pronounced Aristotle's reasoning "so swaggeringly invalid that the student can hardly believe he meant it," and his conclusion "as nearly incredible as any proposition could be."[6]

The prevailing opinion, then, is, and always has been, that Aristotle was muddled in these arguments and that his conclusion was false. I want to show, on the contrary, that he was exceptionally profound and that at least one important part of his doctrine is true. And if, as I believe, Aristotle was right, some far-reaching consequences follow. The conclusion yields, for instance, (1) in metaphysics, the view, much fought over lately, that time has not only an intrinsic order, as does space, but also an intrinsic sense or asymmetry, as space has not; (2) in logic, an area of applicability of a three-valued system, and (3) in theology, a revision of the traditional notion of divine omniscience.

I shall proceed as follows: In the first section, to set forth Aristotle's thesis and three of the arguments for it which I regard as valid; in the second, to clarify these arguments and elicit their presuppositions; and finally, to defend Aristotle's opinion against all the important objections I know of. The reader can thus probably find in this last section his own objection, if he has one, and satisfy himself whether it has been answered.

I. ARISTOTLE'S OPINION

The thesis.—Aristotle, as I understand him, maintains that all propositions are either true or are false, with the sole exception of a limited class of propositions about the future, viz., those that assert the occurrence, or nonoccurrence, of some future contingency. Concerning these (only) he held (a) that they are, antecedently, not true and yet not false, but (b) that any disjunction of such a proposition with its denial is necessarily true.[7]

[5] *Op. cit.* Cf. the introductory lecture of this collection.

[6] "The Sea Fight Tomorrow," pp. 284, 291.

[7] Aristotle believed that "$p \vee \sim p$" is true for any interpretation of "p," including statements of future contingencies, if understood in the *sensus compositionis*. Neither "true" nor "false" can be predicated of the constituents of an interpretation of that law, however, if "p" is a statement about a future

And by a "future contingency" is meant any event which belongs not to the present or past, but which in the nature of things, and not merely in relation to our knowledge or ignorance of things, might or might not occur in the future.

The arguments.—There seem to be three distinct arguments for this, somewhat mixed together and admixed with other considerations. They are predicated on two assumptions, so I shall state first the assumptions and then, paraphrastically, the arguments.

The first assumption is a correspondence theory of truth, the minimum requirement of which is that in the case of any true proposition asserting some predicate of a particular individual, there is (tenselessly) a fact consisting of that individual having that predicate. This raises problems of its own, but we can ignore them. The second assumption is that there are genuine ambiguities in the future, i.e., that sometimes various mutually incompatible events are each of them future possibilities. We shall see what this means shortly.

(1) The first argument is this: Suppose all propositions, including those about future contingencies, are now either true or are false. Then if one man says today that a particular event—e.g., a sea fight—will occur tomorrow, and another denies this, what one of them says must correspond to a fact forthcoming, positive or negative, and what the other says must fail to correspond. But in that case it must already be true that a sea fight definitely will take place, such that there is now no possibility that it might not, or else that it definitely will not take place, such that there is now no possibility that it nevertheless might. This, however, is false; for on such a view "nothing is or takes place fortuitously [*ἀπὸ τύχης*], either in the present or in the future, and there are no real alternatives; everything takes place of necessity and is fixed . . . for the meaning of the word 'fortuitous'

contingency. Aristotle could accordingly accept the first but not the other two of the following formulations as applying to any statements whatever, including future contingency statements: (1) "If a statement is true, its denial is false, and if false, its denial is true"; (2) "Each statement is true, or, if not true, then false"; (3) "If two propositions contradict each other, one must be true."

in regard to present or future events is that reality is so constituted that it may issue in either of two opposite directions."[8]

Two qualifications are added to this and the following arguments. First, that it does not matter how far in advance a prediction is made: "A man may predict an event ten thousand years beforehand, and another may predict the reverse; that which was truly predicted at the moment in the past will of necessity take place in the fullness of time."[9] Second, that it is irrelevant whether such propositions about the future ever *are* actually stated or entertained, for "it is manifest that the circumstances are not influenced by the fact of an affirmation or denial on the part of anyone."[10]

(2) The second argument concerns propositions about past contingencies considered in relation to the time when the event in question was as yet future, and unlike the first it is stated categorically rather than disjunctively. It is this: Consider an object which is now white, e.g., a table. Now on the supposition that every proposition is true, or if not true then false, it must have been true before the table became white, or even existed, that it would become white; indeed, it must have been true from all eternity. But if it was always true that it would become white, then it was never really possible that it might not, "and when a thing cannot not come to be, it is impossible that it should not come to be, and when it is impossible that it should not come to be, it must come to be." So again, "it results from this that nothing is uncertain or fortuitous,"[11] that "there are no real alternatives, but that all that is or takes place is the outcome of necessity."[12] This, however, is false, for

> in those things which are not continuously actual there is a potentiality in either direction [τὸ δυνατὸν εἶναι καὶ μή]. Such things may either be or not be; events also therefore may either take place or not take place. . . . So it is therefore with all other events which possess this kind of potentiality. It is therefore plain that it is not of necessity

[8] *De. Int.* 18[b] 5-9. All quotations are from the Oxford translation of E. M. Edghill, ed. by W. D. Ross.

[9] *Ibid.*, 18[b] 33-36. [10] *Ibid.*, 18[b] 36-38. Cf. Ryle, *op. cit.*, pp. 16-17.

[11] *De Int.* 18[b] 13-16. [12] *Ibid.*, 18[b] 30-31.

that everything is or takes place; but in some instances there are real alternatives, in which case the affirmation is no more true and no more false than the denial.[13]

(3) The third argument is exceedingly succint and straightforward, being but a combination of the two aforementioned assumptions and a conclusion therefrom. It is simply this: "Since propositions correspond with facts, it is evident that when in future events there is a real alternative, and a potentiality in contrary directions [*τὰ ἐναντία ἐνδέχεσθαι*], the corresponding affirmation and denial have the same character."[14] We could express this otherwise, but no better, by saying that if the world is such that something which has not happened nevertheless might occur or might fail to occur in the future, and if this contingency or "potentiality in contrary directions" belongs to the nature of things and is not merely relative to our knowledge or ignorance of things, then it expresses the *whole* truth about such an event to say that it might happen, or it might not.

It will be noticed that the arguments I have summarized bear only on part (a) of Aristotle's thesis, viz., that future contingency statements neither are true nor are false, and do nothing to prove part (b), viz., that any disjunction of one such proposition and its denial is nevertheless necessarily true; and it is, in fact, only the former that I shall consider. It may be that the truth of (a) would require a revision of (b), as I believe it would, but we shall have enough on our hands if we say what needs to be said concerning (a).

II. COMMENT

These arguments are valid, though terribly susceptible of misinterpretation. In this section I shall (a) formulate a more careful statement of the doctrine of real contingencies, upon which Aristotle's and my own forthcoming arguments rest, and (b) indicate the senses in which the modal terms involved should be taken.

[13] *Ibid.*, 19[a] 9-20. [14] *Ibid.*, 19[a] 32-35.

The doctrine of real contingencies.—Most critics have tended to treat Aristotle's arguments simply as articles of logic, interpreting such key words as "necessary" as logical modalities, predicable of propositions, such that the question then becomes that of whether these arguments constitute logically valid inferences—as they plainly do not, unless further assumptions are introduced. From the mere fact that a statement is true, it hardly follows that it is logically necessary—unless one is prepared to abandon any distinction between contingent and necessary truths.[15] I should maintain, then, that Aristotle's arguments are derived from a metaphysical assumption: the assumption, namely, that there are real ambiguities in nature, i.e., from a doctrine of real contingencies.

This doctrine is best understood in terms of what it *denies*, namely, universal causal determinism, which is to the effect that (as it has just recently been well put) "without exception . . . the present (including the present character and behavior of human beings) is the only present that could exist, given the past that did exist, and the future will be the only future that could exist, given the particular present that now is."[16] Belief in determinism, that is, involves the belief that, for any event that ever happens, there are conditions given which nothing else could happen. And since the causal conditions of events, or the occurrences of such conditions, are themselves events, this proposition does entail that the past and present states of the world, in their totality, are compatible with only one future, that the future is unambiguous, save in reference to our powers of prediction.

The denial of this is simply that *some* events are not such as described. This view has sometimes—I think by Aristotle—been thought plausible only as applied to the choices or decisions of men. But however narrowly construed, if this view is true then determinism, as formulated above, is absolutely false, the

[15] Linsky, *op. cit.*, p. 252, interprets Aristotle as abolishing this distinction, comparing his philosophy to that of Leibniz in this respect. Cf. Butler, *op. cit.*, pp. 267-268.

[16] H. Van Rensselaer Wilson, "Causal Discontinuity in Fatalism and Indeterminism," *Journal of Philosophy*, LII (1955), 70.

past and the present states of the world *are* compatible with any of several alternative futures, and "future possibilities" are real ones, not just logical or relative possibilities.

I shall give no argument for this view of real contingencies; indeed, I think it can be neither proved nor disproved, though I happen to believe it. For the purpose of the present discussion, it may be regarded as an hypothesis only, such that our problem can be formulated as the following hypothetical one: If the doctrine of real contingencies is true, was Aristotle right in believing that some propositions—viz., those asserting or denying the existence in the future of contingent things—are neither true nor false?

That Aristotle believed in real contingencies is, I think, beyond doubt, but I shall not prove it here, it being an historical question. Two articles of his philosophy do, however, deserve to be mentioned, as clarifying somewhat the doctrine in question.

The first is his rarely formulated theory of the fortuitous. According to this, as I understand it, any causally connected series of events is such that each member is caused by its predecessor, if it has a predecessor, and in this sense comes about "of necessity." The beginning of such a series, however—e.g., the ultimate cause of the choice or decision of a living being, or perhaps of a man—"no longer points to something further," and thus, Aristotle says, is "the starting-point for the fortuitous, and will have nothing else as cause of its coming to be."[17] Such a conception involves an unusual conception of causation, according to which some things—e.g., men and other active things, in the strict sense of "active"—can be "originative sources of motion," but Aristotle evidently did believe this (as I do), and whether it is unusual or not is in any case irrelevant.

The other doctrine, closely connected with the first, and alluded to in the arguments I have paraphrased, is that of rational and nonrational capacities (*δυνάμεις μετὰ λόγου* and *δυνάμεις ἄλογοι*).[18] A nonrational capacity is the disposition of something toward a unique state under given conditions—which is, of course,

[17] *Met.*, bk. VI, ch. iii. Cf. *De Gen. et Corr.*, 337[a] 34 ff.; also, W. D. Ross, *Aristotle*, (London, 1949), p. 164.

[18] See *Met.* 1046[a] 38-1046[b] 25; *Phys.* 251[a] 28.

what philosophers normally have in mind in speaking of capacities or dispositions. Sugar placed in warm water, for instance, can only dissolve; it cannot sometimes dissolve, sometimes ignite, and sometimes do nothing. Water, heated to a certain point, can only boil, it cannot solidify; the sun can only warm us, under given conditions, not sometimes warm and sometimes chill us. Rational capacities, on the other hand, are "capacities for opposites [*δυνάμεις τῶν ἐναντίων*]," and characterize (together with nonrational ones) only living things, perhaps only rational beings.[19] These are dispositions to do any of two or more incompatible things under a given set of conditions, that is, dispositions that are really ambiguous. Such capacities are not utterly ambiguous—indeed, the states or acts to which a thing having such a capacity may tend, in given circumstances, may be as few as two—but the important thing is that such a disposition is not toward some unique state. Moreover, such capacities are not manifest "necessarily," i.e., from ordinary causal processes; if they were, then, being capacities for opposites, they would result in incompatible states at the same time, which is impossible. Something further is needed, then, to "decide," and this is what Aristotle calls "desire or will [*ὄρεξις ἢ προαίρεσις*]."[20] And this, again, is something which is not simply the actualization of another capacity, rational or nonrational, but is instead simply the act of an active being—i.e., of a being which acts and is not merely acted upon—considered as an "originative source of movement," not itself entirely determined to one thing rather than another by any fixed causal connections.

Now either of these doctrines—which really amount to much the same thing—would yield a theory of real contingencies. And both, I submit, are plausible in the light of what we take ourselves, as active beings, to be, but I shall not prove them.

Modal predicates.—Nothing is so apt to mislead as Aristotle's

[19] *Met.* 1047^{b} 1-1048^{a} 16. See also H. H. Joachim, *The Nicomachean Ethics* (Oxford, 1951), pp. 108-110. This distinction is not consistently maintained, for Aristotle sometimes connects contingency with *matter* as such. See also *Met.* 1050^{b} 6-14: "Every potency is at one and the same time a potency of the opposite."

[20] *Met.* 1047^{b} 35-1048^{a} 11. Cf. Joachim, *op. cit.*, p. 109.

use of such concepts as "necessary" and "possible," so I shall now clarify these.

Given a meaning for any one of the four modal terms—"necessary," "possible," "impossible," and "contingent"—the others can forthwith be defined in terms of it. Given, for instance, a meaning for "necessary," the remaining three predicates can be explicated as follows:

x is possible $\equiv \sim(\sim x$ is necessary)
x is impossible $\equiv \sim x$ is necessary
x is contingent $\equiv \sim(x$ is necessary) . $\sim(\sim x$ is necessary),

substituting for "x" a statement, an event, or whatever the sense of the modal term requires, and letting "$\sim x$" designate, not simply the absence of x, but something not compossible with x, in the sense of the modality in question.

These definitions, which are of course empty until a meaning is given to the basic modal term, exhibit one important point that is easily overlooked, viz., that the possible and the contingent are *not* the same. Whatever is contingent is possible, but not vice versa; for if anything is necessary, then it is also possible, but not therefore contingent.[21]

In the light of these definitions four more or less familiar senses of necessity and hence also, derivatively, of contingency, can be distinguished in roughly the following way:

(1) *Logical necessity* is predicable of a *statement* or *proposition* and corresponds to analyticity. Thus

necessarily $p \equiv$ "p" is analytic,

and a logically contingent statement is thus one which is neither analytic nor self-contradictory.[22]

(2) *Epistemic necessity* is predicable of events and states, though only in a derivative way, and corresponds to what is known to be. Thus

necessarily $e \equiv e$ is known to exist,

and an epistemically contingent event is one concerning which

[21] See *De. Int.*, ch. xiii; also Yehoshua Bar-Hillel, "Mr. Weiss on the Paradox of Necessary Truth," *Philosophical Studies*, VI (1955), 92-93.

[22] Cf. W. V. Quine, "Notes on Existence and Necessity," *Journal of Philosophy*, XL (1943), 121.

it is not known whether it exists (has existed, will exist) or not—one which, "for all we know," might exist, or might not. This is indeed a strange kind of contingency and is in fact no real contingency at all, being only a reflection of someone's knowledge or ignorance of things, but it is nevertheless the commonest sense of contingency embodied in ordinary speech. If, for instance, someone says before opening a drawer that it might or might not contain his necktie, he only means that he does not yet know; if some one says it might rain a week hence, he ordinarily means only that he does not know that it will not. On the other hand, one who knows, say, that Mr. Jones is in New York cannot really consider it possible that he is not.[23]

(3) *Nomical necessity*, also called "causal" and "etiological," is necessitation by causation and is predicable of an event. Thus

necessarily $e \equiv$ there is (was, will be) a cause for e,

and a nomically contingent event is therefore one neither the occurrence nor nonoccurrence of which has a cause.[24] Derivatively, an event causally dependent, remotely or proximately, upon a contingent event would itself be contingent, prior to the occurrence of any member of the causal series of which it was itself a member. Of course it is customary to deny that causation does involve necessitation, and this is correct if such necessity be considered logical (and thus predicable only of statements or propositions), but on the other hand there is a fairly clear sense in which, for instance, water *cannot but* boil under certain conditions, or a man who is decapitated *must* die, and so forth, and it is simply the modality expressed by such words as "cannot but" or "must" in such uses which is here called "nomical." Also, some would deny that there *are* any contingent events, in this sense, but I have only made it an hypothesis that there are, and I am in any case not trying to prove they exist by defining them.

(4) *Temporal necessity*, which might less misleadingly be called

[23] Cf. Nelson Goodman, "On Likeness of Meaning," in *Semantics and the Philosophy of Language*, ed. by Leonard Linsky (Urbana, Ill., 1952), p. 68.

[24] "Nomic necessity" has been used by R. B. Braithwaite and W. E. Johnson. "Etiological necessity" has been used by C. J. Ducasse.

"irrevocability" or "unalterability,"[25] applies to any event that has happened, and is thus relative to a date. Thus

necessarily $e \equiv e$ has already occurred,

and a temporally contingent event is thus simply one which has not yet occurred, an event temporally incompatible with it having likewise not yet occurred. This is perhaps the strangest kind of contingency yet, but no questions are begged by introducing it. What this notion calls attention to is just this obvious, and in other contexts trivial, fact: that nothing that may be in the past is in any way revocable or alterable by what might happen now, whereas this is plainly not the case with such things as may be yet to come. The lapse of time by itself thus imposes a kind of necessity on things; things once capable of being otherwise, or of not existing at all, are no longer so. Until an event has happened, it is sometimes possible that it might not, but once it has happened, it is no longer possible that it did not—and this, despite the fact that it is still possible that it did not happen in any or all of the three foregoing senses of "possible." All this is surely a truism of sorts, but it does indicate an indubitable sense in which past things, but not future things, are by now "of necessity."

It must be added that none of the above distinctions purports to be an enlightening *analysis* of any modal concept. Indeed, I am sure that some senses of necessity cannot be analyzed at all without circularity; it is very doubtful, for instance, whether "cause" can be so analyzed, especially if causal statements be regarded as warranting counterfactual inferences. My only object, then, has been to distinguish these several senses sufficiently to prevent confusion in what follows.

Real and relative contingencies.—To speak of an event as contingent is to say, loosely, that it might or might not happen, that its occurrence is neither necessitated nor ruled out; but this, in the light of the foregoing distinctions, can mean any of several things.

It might mean (a) that a statement asserting its occurrence is logically contingent. But this is not remotely what Aristotle

[25] Cf. Butler, *op. cit.*, p. 269.

was thinking. In saying that the assumption of truth for a prediction requires necessarily the occurrence of what is predicted, he emphatically does not mean that such an assumption entails that the prediction is necessary or its denial self-contradictory—it is events, not statements, which are spoken of as necessary or contingent.[26] Moreover, this interpretation would abolish any distinction between logically necessary and contingent statements, or between false and self-contradictory ones, which would be an absurdity, especially if ascribed to Aristotle.

Again, to speak of an event as contingent might mean (b) that it is uncertain, i.e., not known, whether the event has occurred, is occurring, or will occur.[27] I have called this kind of contingency "epistemic"; it can also be called "relative," being always relative to someone's knowledge of things. If, for instance, an Athenian had said in 400 B.C. that Socrates might or might not die of poisoning, he would have meant in part at least that it was not known whether this would happen. Now being a very ordinary sense of contingency, it is exceedingly easy to force it upon Aristotle's arguments; indeed, many philosophers have insisted that this is the only kind of "contingency," other than logical, that is intelligible.[28] But it would be absurdly incorrect to so interpret Aristotle: from the mere fact that this or that person may not *know* whether something is going to happen, it hardly follows that it is neither true nor false that it *is* going to happen,[29] and Aristotle cannot be considered so dull as to have imagined that anything of this sort *does* follow.

Or again, one might mean by contingency (c) that natural causal processes are themselves ambiguous with respect to some

[26] Prior, *op. cit.*, p. 324, has shown that Aristotle was not thinking of logical necessity in these arguments.

[27] Cf. Anscombe, *op. cit.*, p. 12.

[28] Hobbes is an excellent example: "All propositions concerning future things, contingent or not contingent . . . are either necessarily true, or necessarily false; but we call them contingent because we do not yet know whether they be true or false; whereas their verity depends not upon our knowledge, but upon the foregoing of their causes" (*The Metaphysical System of Hobbes*, Open Court edition, ed. by M. W. Calkins, pp. 78-79). Cf. C. J. Ducasse, "Truth, Verifiability, and Propositions about the Future," *Philosophy of Science*, VIII (1941), 331-333.

[29] Cf. Baylis, *op. cit.*, p. 163.

outcome or other, that it is really undetermined by anything past or present whether an event of a given description is going to happen. This sort of contingency, which I have called "nomical," might also be called "real" contingency, being not relative to this or that man's powers of prediction but rather belonging to the very nature of things. And it is what our aforementioned Athenian could further have meant in saying that Socrates might or might not die of poisoning; that is, he might have meant, especially if he were philosophical, not only that *he* was uncertain about the outcome of things but that it was "uncertain," i.e., as yet undetermined, by nature; that the state of the world was then causally compatible with either of at least two futures, the one containing that event and the other not. And it is in *this* sense that I would understand Aristotle, since (i) I believe that some things are contingent in this sense, (ii) we have good reasons to think that Aristotle thought so too, and (iii) this interpretation is absolutely required in order that Aristotle's thesis can be rendered even plausible.

Finally, reference to an event as contingent might mean (d) that the outcome, i.e., its occurrence or nonoccurrence, has not already been decided one way or the other by the mere lapse of time—which is what I have called "temporal" contingency. One might, in short, simply be making the point that an event of a given description has not happened *yet*. Now one naturally wants to think that this is all Aristotle had in mind—else why should he have regarded contingencies as belonging to the future only, never to the past? But this, too, would be wrong. Aristotle did not hold that *all* statements having reference to the future are neither true nor false, though he can hardly have doubted that such statements do indeed have reference to things that have not happened yet.

Aristotle's doctrine should, therefore, be construed as one concerning not merely contingent events, in the sense of real or nomical contingency—as this belongs to past events no less than to future ones—and not merely events of the future, or temporally contingents things—as some of these may be already determined—but as one concerning the *combination* of these. And it is this combination of modal notions which makes his arguments

so enormously liable to confusion and at the same time so profound. His claim is, therefore, that (a) if an event of a given description is really contingent in the sense given, i.e., not yet nomically determined, and (b) if the outcome of things, i.e., the occurrence or nonoccurrence of the event in question, has not already been decided merely by the lapse of time, such that it irrevocably has happened or has failed to happen—in short, if the thing in question is a future contingency—then (c) any statement asserting or denying that it will happen is not (yet) true, but also not (yet) false.

Summary.—We can now summarize the argument in this fashion. Using the general notion "incapable of being otherwise" and "necessary" interchangeably, we may say:

If the statement "*e* has happened" is *true*, given a descriptive interpretation for "*e*," then the event *e* is no longer capable of being otherwise; i.e., it is unalterable, with respect to its occurring, failing to occur, or occurring otherwise than as described, by anything that happens between the time of *e* and the present, (however nomically contingent *e* may be). Or, calling this statement "*p*,"

(1) ("*p*" is true) ⊃ (necessarily, *e*).

Note that this is *not* saying either (a) that since one proposition necessarily entails another, then it entails that that other is necessary, nor (b) that "*e* has happened" is logically necessary, nor (c) that a proposition can entail an event, nor (d) that the truth of "*p*" entails that *e* is nomically determined, nor (e) that *p* is the cause of *e*.

By identical reasoning, if the statement "*e* will happen" is *true*, given a descriptive interpretation for "*e*," then the event *e* is henceforth incapable of being otherwise; i.e., it is unalterable, with respect to its occurring, failing to occur, or occurring otherwise than as described, by anything that happens between the time of *e* and the present (however nomically contingent *e* may be). Calling this statement "*q*,"

(2) ("*q*" is true) ⊃ (necessarily, *e*).

And note here, too, that this is not to be given an interpretation similar to *any* of the five just rejected.

Now one feels no inclination to deny the consequent of (1). That is, once an event has happened, it *is* incapable of being otherwise, i.e., it is *now* impossible that it should not have happened, however nomically contingent it may have been. Hence, one feels no inclination to deny the antecedent, viz., that the statement may be true.

But we *do* deny the consequent of (2), i.e., we deny that *e* is incapable of being otherwise—for instance, that it is incapable of not occurring at all—so long as it is as yet future, *unless* something else already exists nomically sufficient for its occurrence, i.e., unless *e*, though future, is already causally necessitated by what exists already, and hence is not a real contingency. Denying the consequent (with this important qualification), then, we deny also the antecedent, viz., that the statement "*q*" is true. By similar inference, we deny also that "*q*" is false.

III. ANSWERS TO OBJECTIONS

First objection.—The truth values of propositions are no function of time. More precisely, a correspondence theory of truth, such as Aristotle assumes, does not at all require the *present* existence of facts for propositions to agree or conflict with, but only the existence of such facts at some time or other.

C. A. Baylis directed this criticism at Lukasiewicz' arguments,[30] which are essentially those of Aristotle, and Donald Williams has on the same and other grounds rejected *all* theories which deny truth about the future.[31] Baylis suggests that it is no better to argue that a proposition referring to the future cannot be true or false, on the ground that there is *not yet* any definite fact with which it can agree or conflict, than to argue that one referring to the past cannot be true or false, on the ground that there is *no longer* any fact to make it such; and both Aristotle and Lukasiewicz, like everyone else, admit that statements about the past are either true or are false. And Donald Williams, making the same point, says that "all these arguments are

[30] *Ibid.*, p. 162. [31] "The Sea Fight Tomorrow," pp. 294 ff.

strangely selective . . . in making much of supposed difficulties about the future which are quietly ignored as they equally affect the past and present."[32]

Reply.—This criticism quite misses the point, for Aristotle's argument is not to the effect that because some facts do not yet exist, propositions about them are neither true nor false. It was not just their temporal distance that bothered him, but their contingency, or rather, the contingency of some of them. There is thus in Aristotle's philosophy no general denial of truth about the future. The motions of the heavenly bodies and the alterations of the seasons, for instance, are entirely "according to necessity," he thought. Hence, being uniform and determined, nothing stands in the way of there being truths about them in advance of their occurring.[33] We can thus see how little force there is in Williams' remark that "even Aristotle, when he said 'All men are mortal,' did not mean merely that all men living at the moment were mortal,"[34] or his further comment that reference to an eclipse tomorrow, rather than to a sea fight, "would not find us half so receptive of the suggestion of its unreality."[35] Neither man's mortality nor celestial motions are among those "things that can be otherwise."

Second objection.—All temporal references in statements are in principle eliminable, if replaced by explicit references to dates; that is, variations of tense, and hence explicit or implicit references to *nows* and *thens*, can be eliminated from statements altogether without changing their meanings and hence without changing their truth values. The advantage in doing so is that there is removed any temptation to think of the truth values of tensed statements as changing with the lapse of time; any proposition, when so expressed with date or time, appears as an eternal truth, if a truth at all. Instead, for instance, of saying, "Socrates was executed," and thereby having on our hands a tensed statement which it might be tempting to think could not have been true during Socrates' lifetime, but which became true immediately

[32] *Ibid.*, pp. 294-295.

[33] *De Gen. et. Corr.*, 337^{b} 35; *Met.*, 1015^{b} 14; *E. N.* 1139^{b} 24. Cf. Anscombe, *op. cit.*, pp. 6-7.

[34] "The Sea Fight Tomorrow," p. 286. [35] *Ibid.*, p. 290.

thereafter, one can just say, tenselessly, "Socrates *is* executed in 399 B.C.," which amounts to the same thing. And this is fatal to Aristotle's thesis, for if the statements, e.g., "There will be a sea fight tomorrow" and "There was a sea fight yesterday," uttered on separate days with a day intervening and both referring to the same event, are equivalent to "There is a sea fight on—," the date replacing the blank, then it is obviously impossible to say that some of these are true, or are false, while one of them is neither.

St. Thomas thought that what is essentially this view holds for all propositions, necessary or contingent, known to God, since "His knowledge is measured by eternity,"[36] and logicians have tended to take the same view in order to facilitate logical analysis.[37] Bertrand Russell,[38] A. J. Ayer,[39] Nelson Goodman,[40] and J. N. Findlay[41] have all advocated the elimination of tense for certain purposes to achieve clarity and precision, the last declaring that "if we avoided the adverbs 'here' and 'there,' if we purged our language of tenses, and talked exclusively in terms of dates and tenseless participles, we should never be involved in difficulties." Indeed, it has been persuasively argued that it was only by historical accident that variations ever came to be made on verbs to indicate temporal rather than spatial direction in the first place, and that such variations can, in any case, be eliminated, just as we avoid "spatial tenses" by explicit reference, when necessary, to locations.[42] It is in terms of this view that Donald

[36] *Summa Theologica*, pt. I, q. 14, art. 13. Donald Williams expresses the same idea ("The Sea Fight Tomorrow," p. 283): "The most accidental and ephemeral proposition—that the dog's tail twitches at just such and such a moment, for example—is likewise an eternal truth, if it is true at all. It was true when the sun was formed; it will be true when the sun explodes or is extinguished."

[37] Cf. W. V. Quine, *Elementary Logic* (Boston, 1941), p. 6, (quoted by Williams, "The Sea Fight Tomorrow," p. 286).

[38] *Inquiry into Meaning and Truth* (London, 1940), p. 113.

[39] *Philosophical Essays* (London, 1954), p. 186.

[40] *The Structure of Appearance* (Cambridge, Mass., 1951), p. 297.

[41] "Time: A Treatment of Some Puzzles," in *Essays on Logic and Language*, ed. by Antony Flew (New York, 1951), p. 53.

[42] Williams, "The Sea Fight Tomorrow," pp. 287 ff. Cf. his "The Myth of Passage," *Journal of Philosophy*, XLVIII (1951), 459-460.

Williams is able to speak of "the totality of being, of facts, or of events as spread out eternally in the dimension of time as well as the dimensions of space"[43] and to say that "there 'exists' an eternal world total in which past and future events are as determinately located, characterized, and truly describable as are southern events and western events."[44]

Reply.—First, this argument begs the question by simply *assuming* that future contingency statements are already either true or false—precisely the thing at issue—and then offering those very statements, irrelevantly adorned with dates, as an argument.[45]

Secondly, the objection is mistaken anyway, for in fact one *cannot* convey the same information and avoid the systematic ambiguity of "now" and "then" just by substituting dates for tenses. This can be done *only* if an additional statement is supplied in order to complete the information so easily completed by the use of tense, and this additional statement must contain a temporal reference relative to *now*.[46] That is, it must be a statement to the effect that the date mentioned is earlier than, contemporaneous with, or future to *now*—precisely the thing that the use of dates was intended to avoid. Upon being told, for instance, that "Socrates is executed in 399 B.C.," I by no means get the idea that he has already *been* executed, unless I am *also* told, or happen somehow to know, that 399 B.C. is *before now*, that it is *now past*. Of course nearly everyone does know this, but only because we happen to have been taught how past and future times can be designated by numbers and what numbers designate, at various times, what is designated by "now." An ignorant man might not know this at all; but he would have to be more than ignorant to have no sense of the difference between things past and things yet to come.

Third objection.—From the truth of a statement that an event of a given description has happened, there is no temptation to infer that it *had* to happen, or that its occurrence was in any way necessitated by this posterior truth. Indeed, it might be

[43] "The Sea Fight Tomorrow," p. 282. [44] *Ibid.*, pp. 305-306.
[45] Cf. Paul Weiss, *Nature and Man* (New York, 1947), p. 12.
[46] Cf. Butler, *op. cit.*, p. 273.

quite *certain* that it happened, or even that it happened contingently—from which it plainly follows, not that it was not contingent after all, but that it was. But similarly, from the truth of a statement that an event of a given description *will* happen, it does not at all follow that it *must* happen, or that its occurrence is somehow necessitated by this anterior truth, but only that it will in fact occur. Indeed, it might be quite *certain* that it will occur, or even that it will occur contingently—from which it plainly follows, not that it will not be contingent after all, but that it will. Aristotle's confusion thus results from the feeling that if it is antecedently true that an event of a certain kind will happen, then that event is by that truth *obliged* to happen and that hence there is nothing anyone can do to prevent it—whereas all that follows is that nothing will in fact be done to prevent it, that no condition nomically sufficient to prevent it will arise.[47]

More precisely, let e be some event, such as my coughing tomorrow, which, let us assume, is going to happen, and f another event, such as my taking cough medicine meanwhile, which is not going to happen but which would be such that, if it did happen, it would prevent e. Consider, then, these four statements:

(1) e will occur.
(2) If f were to occur, then e would not occur.
(3) f will not occur.
(4) f might occur.

Now it is evident (a) that the first two of these statements entail the third, and (b) all four may be true. Hence, (c) no combination of them can entail that the last is false. Therefore, the truth of (1) cannot entail that e *must* happen, or that it cannot be

[47] This argument is familiar from Leibniz, who the in *Discourse on Metaphysics* (Art. 13) argued that whatever is going to happen is already "assured" or "certain," but not therefore any more "necessary" than what has already happened. The same point was well made by Thomas Reid (*Essays on the Intellectual and Active Powers of Man* (1790), vol. I, Essay III, ch. ii), and more recently by Ryle, who asks, "Why does the slogan 'Whatever is, always was to be' seem to imply that nothing can be helped, where the obverse slogan 'Whatever is, will always have been' does not seem to imply this?" (*op. cit.*, p. 21).

prevented, because (4), which we can assume is also true, entails the opposite, viz., that something might happen which would prevent it.

Reply.—This argument also begs the question, for it just *assumes* that our thesis is mistaken and conceals that assumption by applying it, not to the event *e*, to which our attention is mainly directed, but to *another* event, *f*, concerning which the very same difficulties that were initially raised concerning *e* now arise all over again.

For if, in the first place, *f* is a real and not a relative future contingency—that is, if nothing has yet occurred which is nomically sufficient either for the occurrence of *f* or for its nonoccurrence—then it is not already true that it will occur, on the basis of the arguments heretofore given. By the same token, it is not yet true that it will not. Therefore, if it is assumed that statement (4) is true, and "might" is given the sense of real contingency, then it cannot be simply assumed that (3) is true also without begging the question. *If* (4) is true, then (3), according to Aristotle's and my arguments, is neither true nor false.

But if, on the other hand, *f* is not a real future contingency, then something already exists which is nomically sufficient either for its occurrence or for its nonoccurrence; i.e., either *f* or *not-f* is already nomically determined. But in that case, though (3) may indeed be true, (4) is no longer true, if "might" is given the sense of real contingency; for *f* is now by hypothesis not a contingency, whereas statement (4) asserts that it is.

So in either case, premise (b) of the argument, that all four statements may be true, must be rejected; or at any rate, it clearly cannot be used to *refute* our thesis but can be accepted only *after* our thesis has been refuted without using it.

Fourth objection.—One cannot find any general difference between past and forthcoming events, other than the difference in time, and Aristotle does not rest his thesis upon the mere futurity of future contingencies, this being something they have in common with future necessities. For when the various senses of "contingent" are examined, it is found that past and future events are contingent in the same ways and that the only difference left between them *is* a merely temporal one.

The same logical possibilities apply to both predictions and retrodictions, for instance, the only logical impossibility being, in either case, that an event of a given description both does and does not occur.[48] Again, the same epistemic possibilities apply in both cases, there being ever so many things of the past concerning which we know nothing and can only say that, for all we know, they might have existed, or might not. Indeterminacy, again, belongs to past events no less than to future ones, if it belongs to anything at all, a causally undetermined event being no less so by the mere accident of being now past. So we are left with no way of distinguishing future contingencies from past ones other than by their temporal direction from us, which is by hypothesis irrelevant.

If, accordingly, statements about future contingencies are neither true nor false, then we should accept the same conclusion as applied to past ones, or else say, as Aristotle did not, that the mere futurity of an event, unlike pastness, renders statements about it neither true nor false. Or else, conversely—and this is what most philosophers believe—if there are truths about past events, including contingent ones, there is no reason for doubting that there are truths about future ones too.[49]

Reply.—It is not the futurity of future contingencies, nor the nomical contingency of them, upon which our thesis rests, but the combination of the two. When something has *happened*, then however contingent it may have been, its occurring excludes the possibility of something incompatible with it happening at the same time, whereas in the case of some (not all) ostensibly future things, nothing *has* happened to exclude the possibility of something else happening then instead. In Aristotelian concepts, this is to say that when a potentiality in opposite directions has become actualized in one of these directions, there ceases to be any potentiality for the opposite, the antecedent alternative possibilities having been forever foreclosed by the one that has now become actual.[50] Nothing, however, now excludes any real

[48] Cf. Baylis, *op. cit.*, pp. 161-162.

[49] Cf. Reid, *op. cit.*, vol. III, Essay IV, ch. x.

[50] See G. Grote, *Aristotle* (London, 1880), pp. 115-116. Cf. Paul Weiss, "The Past: Its Nature and Reality," *Review of Metaphysics*, V (1952), 508-509.

contingency for the future and nothing will, *until* it is excluded by the realization of its opposite or of something nomically sufficient for the realization of its opposite; that is, until it has ceased to be a *future* contingency.

Putting this another way, we can say that there is only one possible past but many possible futures. There are, indeed, ordinary interpretations according to which this is absurd, but there is another according to which it is true. It is part of what people mean in saying, as Aristotle said, that the past cannot be "undone," no matter what indeterminism or haphazardness there may be in it.[51] The past consists of everything that has happened, and even if we should suppose that any or all of these things might easily have been otherwise, the fact that they have happened renders impossible forever after the occurrence of anything else in their place. The future, too, consists of everything that will happen; but here, nothing has happened to preclude the occurrence of *either* of two or more incompatible events. Concerning a future contingency, we can say only *if* it occurs then the occurrence of anything incompatible with it is excluded; but concerning a past contingency, we express the fact by saying *since* it occurred everything incompatible with its occurring is excluded.[52] The future *is* alterable, and not merely in the trivial sense of being alterable by our own forthcoming efforts but by the mere *lapse of time*, which itself reduces to zero what were once many alternative future possibilities.[53] One may indeed say that when tomorrow comes, we shall find its contents as fully determinate and exclusive of things incompatible with those contents as we now find the contents of yesterday, and

[51] *E. N.* 1139[b]: "No one deliberates about the past, but about what is future and capable of being otherwise, while what is past is not capable of not having taken place; hence Agathos is right in saying 'For this alone is lacking even to God, to make undone things that have once been done.' " Cf. St. Thomas, *S.T.* pt. I, Q. 25, art. 4, and Weiss, "The Past: Its Nature and Reality," p. 511.

[52] Cf. Anscombe, *op. cit.*, p. 11.

[53] Donald Williams writes that "as for the irrevocability of past time, it seems to be no more than the trivial fact that the particular events of 1902, let us say, can not also be the events of 1952" ("The Myth of Passage," p. 465). But so also, the events of 2002 cannot also be the events of 1952; yet the future is alterable.

this is true; but it only means that with the lapse of time, what were once alternative possibilities have dwindled until reduced to zero by those which have become actual.[54]

If, then, in the sense explained, there is no longer any real contingency in things past, we do not express the whole truth in any statement about the past other than by saying of an event of this or that description that it *did happen* or that it *did not*. In the case of future contingencies, however, it expresses the *whole* truth to say of one of them that it *might happen* or it *might not*.[55] It cannot be true now that it will, for this means more than "might," nor can it be true now that it will not, for this means more than "might not." The lapse of time, and not merely the increase of our knowledge and experience, can confute our statement that it will happen as well as our statement that it will not, whereas only the increase of knowledge, and not merely the lapse of time, can confute our beliefs about things past and done.[56]

Fifth objection.—Aristotle's arguments rest on a common amphiboly, treating as equivalent certain statements which can indeed be expressed in the same way but which are really quite different in what they assert. One is

necessarily, *p* or *not-p*,

understood in the first place as meaning that the whole disjunction is necessary (which is true) but then understood to mean that one or other of the disjuncts by itself is necessary (which hardly follows). Another is

if *p*, then necessarily *p*,

understood first as meaning that the whole hypothetical statement

[54] This point is taken from Charles Hartshorne, *Man's Vision of God* (Chicago, 1941), p. 101.

[55] Cf. Mary and Arthur Prior, "Erotetic Logic," *Philosophical Review*, LXIV (1955), 57-58.

[56] Donald Williams remarks that "there is a wholly unacceptable suggestion in these passages that an event may be contingent before it happens and necessary afterward; that indeed all present and past events . . . are necessary. But in so far as he is persuaded of the truth of his first proposition, it must be by deduction from his own metaphysics of potentiality and tendency, rather than by logic or observation" ("The Sea Fight Tomorrow," pp. 290-291). I think this interpretation is right but the evaluation wrong.

is necessary (which is true) and then to mean that the consequent, by itself, is necessary (which is by no means the same).

Moreover, if every true proposition is in some sense necessary, then every false one must in a similar sense be impossible; indeed, Aristotle says as much: "That which is must needs be when it is, and that which is not must needs not be when it is not."[57] But if we combine these suppositions with his further claim that a proposition may be contingent, we can, by elementary rules of logical inference, get the absurd result that if a proposition is contingent, then it is false and hence impossible, but also that it is true and hence necessary. Thus, in obvious notation:

$$(1)\ p \supset Np$$
$$(2)\ \sim(Np) \supset \sim p$$
$$(3)\ Cp \supset \sim p,$$

and so on. And:

$$(4)\ \sim p \supset Ip$$
$$(5)\ \sim(Ip) \supset p$$
$$(6)\ Cp \supset p,$$

and so on. And this is absurd.

Reply.—If Aristotle had argued (1) that it is necessary that every proposition or its denial is true, and that therefore every proposition is itself necessarily true, or its denial necessarily true, or (2) that a proposition necessarily entails itself, and therefore necessarily entails that it is itself a necessary proposition, then his arguments would be as "swaggeringly invalid" as Donald Williams, who ascribes them to Aristotle, has claimed.[58] But in fact he says nothing like this. Someone might be tempted to adopt Aristotle's thesis on the basis of such amphibolies, but Aristotle did not,[59] and neither do I.

The *reductio ad absurdum* of the second part of this criticism is question begging, for it simply *assumes* that if a proposition is not true, then it is false, and if not false, then true—precisely

[57] *De Int.* 19[a] 23-24. But notice that this is a temporal, and not an ordinary hypothetical statement.

[58] "The Sea Fight Tomorrow," pp. 291-292.

[59] As Linsky, *op. cit.*, p. 251 and Butler, *op. cit.*, pp. 267-268, have both pointed out.

the point at issue. Thus, the transposition of step 2 is sufficient for asserting "$\sim p$" only if this is read "*not-p*." This cannot be equated with "p is false" without begging the question. Again, step 5 is not even correctly symbolized; the consequent must read "$\sim(\sim p)$," meaning "it is not the case that *not-p*"—which does not mean that p is true. Moreover, step 3 is accomplished only by substituting "contingent" for "not necessary," and step 6 by substituting the same for "not impossible." But "contingent" means "not necessary *and* not impossible"; it does not mean "not necessary *or* not impossible." A thing which is impossible is indeed not necessary—but not therefore contingent; similarly, a thing which is necessary is indeed not impossible—but again, not therefore contingent. These distinctions are simply obliterated by this kind of criticism.

Sixth objection.—Whether or not there is any omniscient being, the conception of one involves no evident absurdity. But an omniscient being would by definition know everything, and hence everything that is going to happen, and a being less than omniscient can know something of the future. And if any man or god might know which of various alternative contingent things are going to happen, then it must already be true, though not therefore necessary, that those things will happen, and that things incompatible with them, while not impossible, will not happen.[60]

Reply.—An omniscient being would not be one who knows everything, simply, but one who knows everything that is knowable.[61] If there is anything that cannot be known—and of course there are infinitely many such things, for example, all false propositions—then even an omniscient being cannot be expected to know it. This kind of qualification was presupposed by the Scholastics when God's *omnipotence* was considered, the view of St. Thomas being, for example, that God can do only whatever is metaphysically capable of being done; if anything is inherently

[60] Cf. St. Thomas, *S.T.* pt. I, Q. 22, art. 4. For a brief history of Scholastic opinion on this point, see Philotheus Bochner's edition and study of Ockham's *Tractatus de praedestinatione et de praescientia Dei et de futuris contingentibus*, Franciscan Institute Publications (St. Bonaventure, N.Y., 1945), pp. 75 ff.

[61] Cf. Weiss, *Nature and Man*, p. 13.

impossible, then it is idle to expect that God should do it.[62]

With this qualification, the question becomes whether things that are future and contingent are knowable. Now of course they are not knowable by inductive inference, but that is *not* the question. The question is whether *any* degree of prescient or sapient power would enable one to know which of several alternative contingencies will in time come about, assuming there are real contingencies.

It seems evident that it would not. For in the first place, knowledge can be only knowledge of what is true, and it has been our main point to prove that statements about future contingencies are neither true nor false. To argue, then, that such statements must be true, since they are known to God, if there is a God, is plainly circular.

Secondly, if the future is partially undetermined and in its very nature ambiguous, an omniscient being would have to comprehend it just that way. This alone would be knowledge of the future; to see it as otherwise, to comprehend it as already determinate and to judge exactly what is going to happen, is not knowledge but only the obscurity of guesswork and error.[63] Of course on this view an omniscient being would know more at one time than at another, but this need not be inconsistent with the idea of omniscience; at any time such a being would know all there is to know, and this ought surely to suffice.[64]

I think the only rejoinder that can be made to this is that, as Boethius and many others after him put it, "foreknowledge is not the cause of any necessity in things to come."[65] This point is iterated often, as if it left nothing more to be settled. Gilbert Ryle, for instance, observing that neither an "anterior truth" nor the knowledge of it could *cause* any event to happen, adds the similar point that propositions can never *entail* events

[62] *S.T.* pt. I, Q. 25, art. 3.

[63] Hartshorne, *op. cit.*, p. 98. Cf. Boethius, *The Consolation of Philosophy* (Loeb Classical Library), p. 387.

[64] Hartshorne (*op. cit.*, pp. 104, 139) calls this conception of omniscience "the Principle of Gersonides," after Levy ben Gerson (fourteenth century) who may have been its originator.

[65] *Op. cit.*, p. 385. Cf. E. Gilson, *The Philosophy of St. Thomas Aquinas* (St. Louis, 1941), p. 119.

but only other propositions.[66] Now all this true, but it is irrelevant to what is here being asserted. I am not saying, nor did Aristotle, that foreknowledge would *cause* this thing or that to happen,[67] or that propositions, known or unknown, *entail* events, all of which is surely nonsense, but rather that the supposition of foreknowledge *is* inconsistent with the claim that any of several alternative futures might become real, using "might" in the sense of real and not relative contingency. For the assumption that any one of these futures, no matter which, is already known, and hence will in fact come into being, is incompatible with the theory of real contingency, viz., that some other future is no less likely to come into being than that one.

Seventh objection.—Suppose someone, "*A*," indulged in prophecy, asserting, "Henry will sneeze tomorrow," and another person, "*B*," following Aristotle's principles, replied, "No, he might, or he might not; it cannot yet be true either that he will or that he will not, this being in the realm of contingencies." Tomorrow comes, and Henry sneezes. *A*, it would seem, can now say, "I said he would sneeze, and he did, so what I said was true, while you, in denying that what I said was true, are now shown to have been wrong." This comment by *A* seems reasonable, for it certainly seems that yesterday *A* had something that *B* did not have—namely, a true opinion. Of course, *B* did not say Henry would not sneeze, but still, his opinion was not as good as *A*'s—for *A*'s opinion, we now discover, was true, while *B*'s was just noncommittal.

Reply.—The most this argument can be claimed to prove is that *either* A's prophecy was true *or* that it *became* true, just as it became fulfilled,[68] through the lapse of time and the reduction to zero of alternative possibilities. There is nothing in it to show that it *was* antecedently true, any more than that it was antecedently fulfilled. Or, to put it otherwise, all the argument shows

[66] *Op. cit.*, pp. 21-23.

[67] Aristotle explicitly denied it (*De. Int.* 19^{b} 36).

[68] Essentially this point is made by Ryle, *op. cit.*, pp. 19-20: "A prophecy is not fulfilled until the event forecast has happened. . . . The establishment of incorrectness certainly cancels 'true' but not, as a rule, so fiercely as to incline us to say 'false.' "

is the trivial fact that when "tomorrow" had ceased to be tomorrow and had become today, it contained just those events which then happened; it does not show that, on the day before, it was *going* to contain those rather than alternative ones.[69] No advantage, in the way of true opinion, can be claimed by *A* as having obtained when he first made his prediction, for all he can claim is that it was *fulfilled*—which suffices for any wagers that were made. The apparent advantage of his opinion over *B*'s is only an ex post facto sort of one—much like the advantage one might have who, by taking one path rather than another, stumbles upon a fortune. *B*, on the other hand, has had from the beginning a real advantage, for he claimed the future to be ambiguous and unsettled—as in fact it then was. His opinion, unlike *A*'s, did not have to wait to become true but was true from the start. It only *became* an inadequate opinion, but not disconfirmed, when *A*'s prediction came true, that is, when the event in question ceased to be a future contingency and to admit of any possibility of being otherwise.

It might be said that if we allow *B*'s opinion to have been true in advance, then nothing prevents *A*'s opinion from having been true as well. But this overlooks the fact that *A*'s statement concerns a future contingency, whereas there is nothing of contingency in *B*'s proposition that Henry might sneeze or he might not. We need not wait upon anything to see whether this is so.

Again, it might be said that *A*'s statement can be reformulated to say, "The belief that Henry will sneeze, while perhaps not true now, will become true" and that this assertion is about a future contingency no less than the first. But this complication introduces nothing new into the original argument; for *B* could reply that it might become true or it might not, the rest of the argument then proceeding exactly as before, only with more words.

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[69] Cf. Hartshorne, *op. cit.*, p. 103.

PRESENT TRUTH AND FUTURE CONTINGENCY

MR. TAYLOR refers, in his footnotes, to a recent article[1] in which Miss G. E. M. Anscombe denies that what he calls "Aristotle's opinion" was Aristotle's opinion. Her translation and commentary do not appear to have troubled Taylor's conviction that this opinion is maintained in the *De Interpretatione*. I had thought, like him, that it was. I am now inclined to think that this was a mistake. Miss Anscombe has a strong case. Since Taylor says nothing in defense of his interpretation of Aristotle, I will not discuss the question in commenting on his article.[2] Instead, I will treat the thesis of the article, and the arguments that he paraphrases from Aristotle, as Taylor's own, without pressing upon him the language of his direct quotations from the Oxford translation of the *De Interpretatione*.

I

Mr. Taylor defends the view that in a certain kind of case the "proposition" or "statement" that a thing will happen—for example, that a sea fight will take place on the following day—is "not (yet) true, but also not (yet) false."[3] In a case of this kind it is neither true nor false (yet) that the thing will *not* happen, either.

Taylor's choice of the adverb "yet" suggests that in his view the proposition that a thing will happen and the proposition

[1] "Aristotle and the Sea Battle," *Mind*, n.s., LXV (1956), 1-15.

[2] R. Taylor, "The Problem of Future Contingencies," in the present issue of the *Philosophical Review*. One other point about Taylor's interpretation of Aristotle ought to be mentioned. He says that Aristotle's doctrine of rational and nonrational capacities is "alluded to" (p. 7) in the arguments of *De Int.* I cannot find the allusion. The potentiality of being or not being that Aristotle defends against these arguments attaches to whatever things are not always actual, as he says plainly at 19 ^{a}9-10. *Every* potentiality is a potentiality of opposites, in the sense of *De Int.*; cf. *Met.* 1050 ^{b}8-9, 29-32.

[3] Taylor, *op. cit.*, p. 14.

that it will not, if not "now,"[4] "already"[5] one true and the other false, may nevertheless become so. In the seventh of his replies to objections, he seems to allow that the "prophecy" of A, who said "Henry will sneeze tomorrow," "became true"[6] when Henry did sneeze. He depreciates A's opinion that Henry would sneeze as one that was not "true from the start," but had to "wait to become true."[7]

I will discuss only the thesis that in a certain kind of case it is neither true nor false "antecedently" or "in advance"[8] that a thing will happen. If any proof of that is sound, a parallel argument will prove that in such a case it is neither true nor false that the thing will not happen, either.[9] Whether any propositions will become true and false when the thing does happen or fail to happen and whether, as Taylor seems to hold, what is once true must remain so forever after are outlying questions.

In the statement of this thesis the expressions "(is, was, etc.) true" and "(is, was, etc.) false" or some such others by which it might be conveyed—for example, "(is, was, etc.) the truth"—must be employed in temporal senses. The thesis is not that any proposition is in a nontemporal sense of "is" neither true nor false. It is that propositions have been and are now and will be neither true nor false.[10] This is abundantly shown by Taylor's use of temporal adverbs and adverbial phrases: "yet," "now," "already," "always," "from all eternity," and so on.[11] Now the expressions in question do, of course, have temporal senses. But in the statement of Taylor's thesis (or of any particular application of it or argument for it) some such expression must have a

[4] For this expression, cf., e.g., *ibid.*, p. 23.

[5] For this expression, cf., e.g., *ibid.*, pp. 3, 20.

[6] *Ibid.*, p. 27. [7] *Ibid.*, p. 28.

[8] For these expressions, cf. *ibid.*, pp. 2, 27, 28.

[9] Or this can be deduced from its being neither false nor true that it will happen. Taylor licenses the deduction by his statement of the first argument, *ibid.*, pp. 3 f.

[10] It is therefore not in immediate conflict with the "law" that no proposition is neither true nor false, in the statement of which the present tense is nontemporal.

[11] Cf. footnotes 3, 4, 5 above; for "always" and "from all eternity," cf. *ibid.*, p. 4.

temporal reference whose *warrant*, if not inexplicable, is at least very eccentric.

The thesis requires us to treat as an intelligible question, for example, the question whether it is already true or false, or not yet true or false, that a sea fight will take place tomorrow. But consider the sentence "It is already true that a sea fight will take place tomorrow." Something is alleged to be true already. What? That a sea fight will take place *tomorrow*, in the bare sense that one *will* take place then? Apparently so. Not, for example, that one is (already) *scheduled* for tomorrow. ("The war hardly begun, and already there's going to be a sea fight!"). Simply that one will take place tomorrow. But what does it mean to say that that "is *already* true" or "is not *yet* true"? (What would it mean to say that a sea fight will already or will not yet take place tomorrow?)

"It is not true now that Henry will sneeze tomorrow." What is it that is not true *now?* That Henry will sneeze *tomorrow?* What would it mean to say that that *is* true now? If it is true now, at last, that I can play tennis, then now, at last, I can play tennis. If it is true now that Henry will sneeze tomorrow, then Henry will sneeze tomorrow now; what does that mean? It might be said by someone who had completed arrangements to *ensure* that Henry would sneeze on the following day: "He'll sneeze tomorrow now, all right, I've seen to that!" One might guess, therefore, that "It is not true now that Henry will sneeze tomorrow" expresses a denial that (it is true that) Henry's fate is now *sealed* in this respect.

One might guess, in general, that when Taylor denies that it is true yet (already, etc.) that a thing will happen, he means to deny the truth, not of the proposition that the thing will happen, in the bare prospective sense that it *will*, but of the proposition that its happening is now *ensured*, the proposition that there is no longer a real possibility of its *not* happening. This guess would be wrong. Taylor certainly means to deny something else, from the admission of which he supposes that it would *follow* that there was no longer, if there had ever been, a real possibility of the thing's not happening. What he means to deny is precisely "that it is true yet that the thing will happen,"

in a simple future sense of "will happen" and a simple present sense of "is . . . yet."

But in that construction of them, such sentences as "It is true already that the thing will happen" and "It is not true yet that it will happen" are not readily intelligible, except in special circumstances. "So now it's *true* that you will be there!" one might say, in exasperation. "Yesterday you denied it. Now suddenly it's true. Well it's not true yet that *I'm* going to be there, and I have half a mind to turn them down. I'm invited to the beach that weekend anyway." But if Taylor's thesis is to be understood, one must understand, in the *absence* of any such special circumstances, an indefinite number of strange questions and answers. "Was it true yesterday that I would now be awake?" "Will it be false tomorrow that I will sneeze next week?" "It was not yet false in 1920 that she would bear a son in 1938." What do they mean? I have called it a "thesis" that in a certain kind of case "it is neither true nor false 'antecedently' or 'in advance' that a thing will happen." But *what* thesis is it?

II

"He discovered that what he had first thought was true, after all: twenty-eight *was* a perfect number." Here what warrants the tense of "was true" is a reference, which I have made explicit in the phrase "he discovered," to something past that provides an *occasion* to call it "true" that twenty-eight is a perfect number. There is no implication that it was true *then*, when he discovered that it was, any more than that twenty-eight "was" a perfect number at the time.[12] Similarly, "I wonder if what he says about it tomorrow will be true, for a change" does not imply that it will be true *at the time*, if it is true.

When the temporal reference of such expressions as "had been true" and "will be true" is not tied in this way to some reference, express or implied, to what provides an occasion for their use

[12] Compare: "You remember Jones, he was the one who wrote novels," which need not imply that he was *then* the one who wrote novels; and "Now x was equal to y, wasn't it, so we can put y equal to z," which need not imply that x was *then* equal to y.

—some past, present, or future thought, belief, claim, rumor, or the like—it is normally tied instead to the reference of the relevant "that"-clause. "Who told you they were married? It's not true yet, and it won't be for some time to come." That is, they aren't married yet, and they won't be for some time to come. "They say he's a spendthrift? That was true once, I admit, but it isn't true any longer." That is, he was one once, but he isn't any longer. "Well, it isn't false *yet* that he does that, I'm sorry to say." That is, he hasn't yet stopped doing that. The propriety of the expressions "It's not true yet," "it won't be for some time to come," "was true once," "isn't true any longer," and "isn't false yet," in these sentences, is secured by the intelligibility of their temporal references in that *other* connection. Sometimes this warrant is more concealed. A: "He was in prison, I hear." B: "Yes, it is true at last that he *was* in prison, thank God." Here, "At last he was in prison, thank God" would have been a hard saying. (A proper emphasis on "was" might convey B's meaning: His imprisonment is at last a thing of the past, to be acknowledged in the past tense.)

When Taylor raises the question whether it is now true (false) that this or that will happen or was true (false) beforehand that it would happen, in what connection are the tenses and the temporal adverbs of the expressions "is now true (false)" and "was true (false) beforehand" warranted? I am sure that he would wish to insist that they are warranted just in their *own* connection: the being true and false, or neither, of propositions. But that is to say, as the appearance of a third alternative might have warned us anyway, that the *concepts* of "being true" and "being false" with which we have to deal in his article are eccentric ones, though they keep some company with the drab, familiar concepts (if they are "concepts") of "being true" and "being false." If it is true that Héloïse married Abélard, then it is also "true now," in Taylor's sense, that she did. But if it is true that my sister will be twenty-nine in October, that is not plainly "true already" (unless, perhaps, it is construed as elliptical for ". . . will be twenty-nine in October *if she lives*"). And if the question whether it is true or false that I will one day break the bank at Monte Carlo *does not arise*, as I think

it does not, the question whether that is "now true or false" nevertheless has an answer, doubtless that it is *not* now true or false.

There is little in Taylor's article to assist us in understanding *what* it is for something to "be true" or "be false" in this sense. But there is a little. There is the assumption, on which he says that the *proof* of his thesis turns, of "a correspondence theory of truth, the minimum requirement of which is that in the case of any true proposition asserting some predicate of a particular individual, there is (tenselessly) a fact consisting of that individual having that predicate."[13] ("This raises problems of its own," Taylor adds, "but we can ignore them.") And a few lines later, from the supposition that "all propositions . . . are now either true or false," it is inferred that "if one man says today that a particular event . . . will occur tomorrow, and another denies this, what one of them says must correspond to a fact forthcoming, positive or negative, and what the other says must fail to correspond."[14]

These words and a few later clues give some encouragement to the following (incomplete) *picture* of "being true," "being false," and, as it turns out, "being neither true nor false." Suppose that it (the proposition, the statement) is now true that I will sprain an ankle tomorrow. Then among the facts that there are is one consisting of my spraining an ankle tomorrow. It is *there*, among the "contents"[15] of tomorrow—such as they are—as another, negative fact of my not spraining an ankle is among the contents of yesterday. It is at a "temporal distance."[16] It is "forthcoming." It has only to come forth. If it be asked whether there is a fact consisting of my performing faultlessly on the harp, say, among the contents of tomorrow, the right answer may well be that there is not: it is excluded from tomorrow by the negative fact of my doing no such thing. What of my yawning tomorrow? This, perhaps, is a case of there not being any such fact there, nor, as yet, any fact of my not yawning tomorrow, but a gap in the ranks, a hole in the future, or perhaps a soft, blurry spot that will have hardened by the time it gets

[13] *Ibid.*, p. 3. [14] *Ibid.*
[15] For this expression, cf. *ibid.*, p. 22. [16] *Ibid.*, p. 16.

here. "One may indeed say that when tomorrow comes we shall finds its contents as fully determinate and exclusive of things incompatible with those contents as we now find the contents of yesterday."[17] But tomorrow has not yet come—"ceased to be tomorrow and . . . become today"—and, so far, it is not "*going* to contain" the one fact or the other; that is, it does not contain either of them *yet*.[18] The proposition, therefore, that I will yawn tomorrow is not yet either true (since the required positive fact isn't there) or false (since the negative fact isn't there either).

These words convey a picture rather than a theory. But the picture might partially *illustrate* a "theory of truth" that would give *meaning* to the expressions "(is, was, etc.) true," "(is, was, etc.) false," and "(is, was, etc.) neither true nor false," in Taylor's use of them. The future's facts approach us, in the picture, from a distance. That has the look of illustrating, by analogy, what Taylor says about them in (I take it) the language of theory: they "do not yet exist," but exist nevertheless "at some time or other."[19] And so on.

But unfortunately the *time* which elapses as the facts approach, in which there are or are not *yet* such-and-such facts at a certain distance, is explicitly prohibited from standing for any time (and what time could it stand for?) by Taylor's proviso that if there is a fact to which a proposition corresponds, it "is" there *tenselessly*.[20] The analogue of this time, in the theory, appears rather to be a timelessness in which "there is (tenselessly)" or is not (tenselessly) any fact of such and such a description—for example, one corresponding to the proposition that a sea fight will take place tomorrow. So this part of the theory, at any rate, cannot give meaning to the suggestion that that proposition is not now true or false.

Suppose that the thesis were revised to suit this part of the theory. We should then have to consider the suggestion that it is not (tenselessly) true or false that a sea fight will take place tomorrow, since there is not (tenselessly) any fact of one's taking place then or any fact of one's not taking place then. But in

[17] *Ibid.*, p. 22. [18] For the expressions quoted, cf. *ibid.*, p. 28.
[19] *Ibid.*, pp. 15, 16. [20] *Ibid.*, p. 3.

that case there would be no such facts—and no question of there *coming* to be such facts—to correspond to what may be said on the day after tomorrow in the words, "A sea fight took place yesterday."

The theory itself might be revised. Taylor might wish to retract the word "tenselessly" and have the theory require that when a proposition is true there should be a fact, of the corresponding description, *at the time*. In that case I should understand it even less well than I do now. I do not know at all what it means to say that "there is (not) a fact consisting of" a sea-fight's taking place tomorrow, for example, unless that it is (not) a fact that one will take place then. And I do not understand such sentences as "It is (not) *now* a fact that a sea fight will take place *tomorrow*" any better with "a fact" in them than with "true" and "false" in them. I do see the picture. "Propositions" could be added to it, row on row. If the correspondence "theory" of truth were meant to *convey* that picture, it would be philistine to deny that one understood it well enough. Its revision to evoke a procession of the facts might even seem an improvement. But if it is not to be taken as *that* sort of theory, I do not find the revision intelligible. And therefore, since I am sure that he does not intend it to be taken as that sort of thesis, I can make nothing of Taylor's thesis that in a certain kind of case the proposition that a thing will happen, since there is not any fact for it, of the right or wrong description, is neither true nor false at the time.

III

I have not discussed the kind of case to which the thesis is intended to apply or the arguments by which it is supposed to be proved. Taylor accepts, but thinks it impossible to establish,[21] the doctrine that some things which may possibly happen in the future are at present "real contingencies."[22] To say that

[21] *Ibid.*, p. 7.

[22] *Ibid.*, p. 6 ff. I say "are at present" in conformity with Taylor's usage: "An event causally dependent on a contingent event would itself be contingent, *prior to* the occurrence of any member of the causal series of which it was itself a member" (p. 10, my italics); "however nomically contingent it

a thing which may possibly happen is "contingent" in the sense of this doctrine is to say (in some of Taylor's other words) that its happening and its not happening are both "real" possibilities[23]; that it neither cannot nor "cannot but" or "must" happen, in the senses of "cannot," "cannot but," and "must" in which a decapitated man cannot live and cannot but, or must, die;[24] that it is really, not just "for all we know,"[25] "uncertain"[26] whether it will happen or not; that "in the nature of things"[27] at the time, "it might happen or it might not."[28] Taylor further defines the real contingency of a given event at a given (prior) time by saying that neither its occurrence nor its nonoccurrence is as yet causally necessitated at that time, as yet "has a cause."[29] That is why he calls such contingency "nomical." I suppose that he brings causality into the *definition* of it because he is convinced that the denial of universal causal determinism is *entailed* by the view that it is sometimes really possible in the nature of things both that a thing will happen and that it will not. The definition has the disadvantage, however, that it involves his fourth argument in a fallacy of equivocation, as I will try to show.

When a thing has not yet happened or failed to happen and is really contingent, *then* it is neither true nor false that it will happen. In each of the four arguments for this thesis, as I will continue to call it, such expressions as "possibility," "possible," "might," "necessarily," and so on are to be understood in the senses proper to the doctrine of real contingencies.

In the first of these arguments, the hypothesis that it is "already true" that a sea fight will take place tomorrow is taken to imply that "there is now no possibility that it[30] might not," and the hypothesis that it is already true that it will not take place tomorrow is taken to imply that "there is now no possibility that it . . . might." These inferences are the core of the argument.

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may have been" (p. 15); "there is no longer any real contingency in things past" (p. 23). On p. 14, however, Taylor writes of a past event *e*, for reasons of verbal symmetry, "however nomically contingent *e* may be."

[23] *Ibid.*, p. 7. [24] *Ibid.*, p. 10. [25] *Ibid.* [26] *Ibid.*, p. 13.
[27] *Ibid.*, p. 3. [28] *Ibid.*, p. 5. [29] *Ibid.*, p. 10.
[30] A *certain* sea fight, apparently, not just any sea fight.

What is supposed to justify them? Taylor does not say. He writes:

> Suppose all propositions, including those about future contingencies, are now either true or are false. Then if one man says today that a particular event—e.g., a sea fight—will occur tomorrow, and another denies this, what one of them says must correspond to a fact forthcoming, positive or negative, and what the other says must fail to correspond. But in that case it must already be true that a sea fight definitely will take place, such that there is now no possibility that it might not, or else that it definitely will not take place, such that there is now no possibility that it nevertheless might.[31]

There is scarcely any attempt, in these sentences, to explain *why*, if it is already true that a thing will happen (or that it will not happen) there can be no possibility that it will not, or in Taylor's phrase "that it might not" (or that it will, or "might").

There is that "fact forthcoming," of which I have made what I could in connection with the notion of truth-in-advance, there is the vaguely suggestive emphasis of the word "definitely," and there is the phrase "such that," which darkens the grammar of the crucial sentence. But there is no explanation of what needs to be explained. Indeed, the reasoning seems to double back on itself in midstream: Suppose that it is now true that a sea fight will occur tomorrow; then that fact must be forthcoming; but in that case it must already be true that a sea fight will take place (as we began by supposing), "such that" ("and therefore"?) there is no possibility that it will not. Why must this last inference be allowed?

Again, in the second argument we are assured that if it was always true that a certain table would become white, "then it was never really possible that it might not,"[32] but we are not told why. And in the third argument we are told that "if the world is such that something . . . might occur or might not occur in the future . . . then it expresses the *whole* truth about such an event to say that it might happen, or it might not."[33] That is, it is not true that it will happen and not true, either, that it will not. But *why* not?

[31] *Ibid.*, p. 3. [32] *Ibid.*, p. 4. [33] *Ibid.*, p. 5.

There is the promise of an answer to these questions in the fourth, "summary" argument. Taylor says first that if it is true that an event, *e*, *has* happened, "then the event *e* is no longer capable of being otherwise; i.e., it is unalterable. . . ."[34] Less picturesquely, he writes, calling the statement that *e* has happened " '*p*' ": "(1) ("*p*" is true) ⊃ (necessarily, *e*)."[35] What is the sense of the word "necessarily" in this formula? Taylor has taken care to distinguish *four* "more or less familiar senses" of the word "necessary."[36] In the fourth of these alleged senses, "the lapse of time by itself . . . imposes a kind of necessity on things."[37] In this sense, "past things, but not future things, are by now 'of necessity,' "[38] since even "things once capable of being otherwise . . . are no longer so."[39] "Once [an event] . . . has happened, it is no longer possible that it did not" ("a truism of sorts").[40] "Nothing that may be in the past is in any way revocable or alterable . . . ".[41] Taylor even writes, oddly, that "necessarily *e* = *e* has already occurred," in this sense of "necessarily."[42] It *appears*, then, that the word "necessarily" occurs in (1) in this fourth sense. If "*p*" is true, then *e* has happened, since "*p*" is the statement that *e* has happened, and it will follow, by the "truism" that what has happened is no longer capable of being otherwise and is not in any way alterable, that "necessarily *e*." It will follow in just *that* sense of "necessarily *e*."

But then Taylor says that if it is true that an event, *e*, *will* happen, it follows "by identical reasoning"[43] that "the event *e* is henceforth incapable of being otherwise; i.e., it is unalterable . . ."[44] Calling the statement that *e* will happen " '*q*,' " he writes as before: "(2) ("*q*" is true) ⊃ (necessarily *e*)."[45] What is the sense of the word "necessarily" in this second formula? It cannot be that in which "past things, but not future things, are by now 'of necessity,' " since *e* is in this case an event that has not yet happened. We must here take the "necessity" of *e* in Taylor's *third* sense, it seems, that of "nomical necessity."

[34] *Ibid.*, p. 14. [35] *Ibid.*

[36] *Ibid.*, pp. 9 ff. He says "senses of necessity," but the context shows that he means to be distinguishing senses of *terms*.

[37] *Ibid.*, p. 11. [38] *Ibid.* [39] *Ibid.* [40] *Ibid.* [41] *Ibid.* [42] *Ibid.* [43] *Ibid.*, p. 14.
[44] *Ibid.* [45] *Ibid.*

For he says that he denies the consequent of (2) "unless something . . . already exists nomically sufficient for . . . [*e*'s] occurence."[46]

The principle of (2) is not that on which (1) seems to be founded. Whatever it is, it is apparently supposed to warrant the inference that a (future) event is *nomically* necessary. In (1) the inference appears rather to be that a (past) event is "temporally necessary," necessary in Taylor's fourth sense. Perhaps that appearance is deceptive, and something other than temporal necessity is intended in (1). But if so, it cannot be nomical necessity. For Taylor says that he is not inclined to deny the consequent of (1), "however nomically contingent . . . [*e*] may have been."[47]

How can it be made out that the reasoning of (2) is "identical" with that of (1)? Only, I think by conjuring up a *fifth* sense of "necessary," in which what is temporally necessary and what is nomically necessary are both "necessary," or else by denying that the nomically necessary and the temporally necessary are really "necessary" in two *senses*, as Taylor has said that they are, and modifying their definitions accordingly. I believe that the latter maneuver is the more promising, and is even suggested by Taylor's discussion of temporal necessity, but I will not try to execute it.

The consequence of this obscurity in Taylor's fourth argument is that the plausibility of (1), such as it is, does not, after all, illuminate (2). Some small light is to be found, however, in the words: "The event *e* is henceforth incapable of being otherwise; i.e., it is unalterable, with respect to its occurring, failing to occur, or occurring otherwise than as described, by anything that happens between the time of *e* and the present."[48] This is Taylor's way of saying, in the fourth argument, that *e* will necessarily occur, that there is now no possibility of its not occurring—either in the *sense* that its occurrence is "causally necessitated by what exists already"[49] or (as I think he would do better to say, if the fourth argument is to be saved) in *consequence* of that, and in such a sense that whatever has occurred

[46] *Ibid.*, p. 15. [47] *Ibid.* [48] *Ibid.*, p. 14. [49] *Ibid.*, p. 15.

in the past may be said to have occurred "necessarily" in the *same* sense. But the words "henceforth . . . unalterable" evoke, for me, a certain picture: *e* is already there, occurring in the future. Nothing can alter that.

Earlier, Taylor has described the doctrine of real contingencies as the doctrine "that there are genuine ambiguities in the future."[50] If it is false, then "the future is unambiguous, save in reference to our powers of prediction."[51] And later: "If the future is partially undetermined and in its very nature ambiguous, an omniscient being would have to comprehend it just that way."[52] "There is only one possible past, but many possible futures. . . . The future . . . consists of everything that will happen; but, here, nothing has happened to preclude the occurrence of *either* of two or more incompatible events"[53] (and none of them, therefore, is among the things that *will* happen, of which "*the* future consists").

These ways of speaking reinforce the picture of a future already there, "consisting" of such happenings as are inevitable, with interstices or "ambiguous" spots to receive, or harden into, some ones of such alternative happenings as are not, so far, inevitable. The past is all solid. If an event *e* has happened, it is "unalterable . . . by anything that happens between the time of *e* and the present,"[54] unalterable "henceback," so to speak, and of course "henceforth" too, like what is unalterably occurring in the future and is "henceforth incapable of being otherwise."

When we recall that the fact corresponding to a true proposition which asserts some predicate of a particular individual is a thing simply "*consisting* of that individual having that predicate,"[55] it is plain that these unalterable events occurring in the future (if I have got the picture right) *are* facts. The picture of there being "now no possibility" that a (certain) sea fight "might not" take place,[56] or of its "never [having been] really possible" that a certain table would not become white,[57] is the very *same* picture that promised, vainly, to illustrate a logically necessary condition of its "already" being "true that a sea fight

[50] *Ibid.*, p. 3. [51] *Ibid.*, p. 6. [52] *Ibid.*, p. 26. [53] *Ibid.*, p. 22.
[54] *Ibid.*, p. 14. [55] *Ibid.*, p. 3, my italics. [56] *Ibid.* [57] *Ibid.*, p. 4.

definitely will take place,"[58] or of its having been "true from all eternity" that the table "would become white."[59] I may have distorted it badly in these conjectural reconstructions, but it does seem at least that the imagery which would give a sort of meaning to the supposition that it is now true, or false, or neither that a thing will happen (if the tenseless "is" of the correspondence theory of truth did not refuse the gift) *will do* for the doctrine of real contingencies as well—for the supposition that it is now necessary, or impossible, or neither that the thing will happen.

If I am right in this, the reasoning which is so bafflingly abbreviated in Taylor's statements of it begins to emerge: "Suppose it to be now true that a sea fight will take place tomorrow. Then there is now a fact, at the temporal distance specified by the word 'tomorrow,' consisting of a sea fight's taking place. But if there is now already such a fact on the way, nothing can prevent its arriving, in due time, intact. Facts are perfectly *hard*, and of course cannot be made to vanish (although, strangely, new ones do *appear* from time to time). So there is now no possibility that a (the?) sea fight will not take place. Or suppose that there is some real possibility, however remote (if real possibilities can really be 'remote'), that *no* sea fight will take place tomorrow. Then there cannot yet be any fact of a sea fight's taking place then. If there were, it could not but arrive, when tomorrow comes. But if no such fact is there, as yet, it cannot be *true* now that a sea fight will take place tomorrow, though of course one *may*, so long as there is no fact there either of *no* sea fight's taking place."

The supposition of its "now being true" that a thing will happen seems to me to be *inseparable* from some such picture as these words evoke. I have tried to explain, in the first and second parts of this discussion, why it does not seem to me to have any meaning independently of some picture in which time is represented by distance, particular times by locations, and the passage of time by motion. In such a picture, there is *another* time to talk about, which does not, however, *represent* anything. Or if it does, Taylor has not told us what. It is a separate question

[58] *Ibid.*, p. 3. [59] *Ibid.*, p. 4.

whether the doctrine of real contingencies is an independently intelligible doctrine, which such pictures illustrate only by analogy. If so, then the conclusion that it is not now either true or false that a thing will happen will not follow, by the reasoning I have just sketched, from the hypothesis that its happening is now really contingent. It will only seem to follow in a picturesque way of phrasing that hypothesis, which we are free to abandon. But if some such imagery as that there is not yet any fact of its happening on the way or any fact of its not happening on the way were *essential* to the sense of the statement, which has so sober an appearance, that the thing's happening is now really contingent, then the arguments would have a peculiar sort of cogency. I cannot find that they have any *other* sort.

But "real contingency" is not defined in these terms. It is defined in terms of causal determinism and indeterminism and of necessities and possibilities that belong to the very nature of things and are not relative to any knowledge of things. Indeed Taylor appeals to the "fairly clear sense in which, for instance, water *cannot but* boil under certain conditions, or a man who is decapitated *must* die,"[60] as though these were evidently necessities which belong to the very nature of things. But this is a mistake. If it "can be neither proved nor disproved,"[61] as Taylor rightly thinks, that there are any contingencies, in his sense, it can hardly be evident that there are any necessities, in the associated sense. How are we to know that the regularity with which water boils under certain conditions and decapitated men die is not *accidental?* What could establish that it is *absolutely* impossible that this water will not boil, that this man will not die? That there are *any* such necessities in the very nature of things is as much a "metaphysical assumption"[62] as that there are *not only* such necessities. In the "fairly clear sense" in which if a man has been decapitated it is altogether impossible that he will visit me tomorrow, it is certainly not altogether impossible that *someone* will visit me tomorrow, nor is it impossible that no one will visit me tomorrow—in fact, it is likely that no one will. These are not confessions of metaphysical faith. Nor, on

[60] *Ibid.*, p. 10. [61] *Ibid.*, p. 7. [62] *Ibid.*, p. 6.

the other hand, are they confessions of my own or anybody's ignorance, as Taylor's account of "epistemic" necessity and contingency ("necessarily $e = e$ is known to exist"[63]) would suggest.

I believe that it could be shown, even from the evidence of Taylor's discussion of the doctrine, which is meant only to *indicate* its sense and the associated senses of such expressions as "possible," that the doctrine of real contingencies, like the correspondence theory of present truth, does not, after all, have any meaning which is independent of the poetic conception that the future is now *there*, with its contents—unambiguous, or altogether ambiguous (an alternative Taylor seems to dismiss), or in some respects ambiguous and in others not. To show this, however, would be very difficult, and I will not make any attempt to do it. I will only say again, again without arguing the question as it should be argued, that I cannot understand that conception *otherwise* than as a "poetic" one. We say things of the following sort: "The fact is, we won't get there on time, I'm afraid." "It is a fact, and has been for years, that he smokes thirty cigars a day." "In fact, though she could not have foreseen it then, she was herself to be the queen of that country twenty years later." They are perfectly intelligible. It does not follow that the question whether the future is now fully stocked with various happenings, or "facts"—or is in part empty, or is entirely empty—is an intelligible question. As far as I can see, it is not, except by reference to a picture that, of course, many "ordinary" sentences evoke more or less strongly. (The third of those in quotation marks is an example.) Even in that understanding of it, it is a strange *question*. Can we have any answer to it we like? I do not say we can. But why not?

IV

I will conclude by discussing briefly an argument which Taylor does not make, but which has a certain resemblance to his argument. Someone might say the following: "It cannot be true that a thing will happen, if it is even remotely possible

[63] *Ibid.*, p. 9.

that it will not; or true that it will not happen, if it is even remotely possible that it will. To say otherwise is simply to contradict oneself, as in the following examples: (1) 'Yes, it's true that she will; she may well not.' (2) 'The truth is, it won't work, but it may just possibly work.' (3) 'I can't guarantee that the thing won't explode. Perhaps it will. But what the man said—that it won't explode—*that's* true enough.' These, and the like, are obvious contradictions. We may immediately conclude, therefore, if she may well not, that it is not true that she will; or if it may just possibly work, that it is not the truth that it won't work; or if the thing will perhaps explode, that it is not true that it won't explode. In general, if it is even remotely possible that a thing won't (will) happen, we may immediately conclude that it is not true that it will (won't) happen."

Taylor's arguments get a certain plausibility, I think, from the submerged fact that such forms of words as this argument cites *are* "logically" bewildering, quite independently of the correspondence theory of truth and the doctrine of real contingencies. "Asked to comment on reports that a sea fight will take place tomorrow, the admiral said: 'The answer is definitely yes. A sea fight will take place. It's possible. And it's possible that no sea fight will take place. And it's quite true that a sea fight will take place. That about sums it up.' "

In the technical sense which the argument requires, however, these opaque combinations of words do not express "contradictions." It would be uninformative in most circumstances to say simply that a thing *will* (won't) happen and may not (may), but it does not follow, if a thing may happen and may not, that it will and will not, or even that it *neither* will nor will not.

Roughly: We say, honestly, "It may and it may not," "Perhaps it won't," "There is some possibility that it will," and so on, only if we are not in a position to say, honestly, "It will," "True enough, it will," "That's false; I *know* it won't," "The fact is, it won't," and so on. It may be that I am not in a position to say whether it (is true that it) will or not because I do not know enough (have not studied chemistry, have not been able to reach her on the telephone). Or it may be that I *do* know enough

to say, for example, that there is some possibility that it will: not "For all I know, there is . . .," but "In fact, there *is*. . . ." But here too I must not be in a position to say, in the face of this knowledge, that it will, simply, or that it will not. ("I know it's failed to work sometimes in the past, but don't worry: I've had the switch repaired.") Of course we are very often not *concerned* with what would establish, if the question were raised, a remote possibility, for example, that there will be no parade. (Parades have been rained out or cancelled. Things do happen sometimes when you least expect them.) We may only want to know whether there will really be a parade and learn from the evening paper that it's true, there will.

I will not try to do better than that here. The objection to be met, of course, is that if you mean (as "we" mostly do not) that it is *really* possible *in the nature of things* that it will not happen, it *is* a contradiction, in the required sense, to say "That's possible, but it's true nevertheless that the thing will happen." A first objection against this objection: If that is a contradiction, it is one no less with the words "it's true . . . that" taken out; if it is not impossible, then, that a thing won't happen, it won't. But at this turn of battle a correspondence theory of truth may be rushed to the front. And in any case, the argument about "really possible in the nature of things" will be long and difficult.

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CONSTRUCTIONALISM

MANY AMERICAN philosophers believe, in varying degrees, that philosophy ought to approximate to the condition of a science and that it is at last beginning to do so. Philosophers, according to this view, ought to cease to ramble desultorily over the field: they ought, like physicists—or logicians—to advance on a common front. They ought, that is, to devote themselves to arriving at "results "which, like those of science, would be recognized universally as such and expressed in a language which, for those familiar with it, leaves no room for ambiguity. In holding this view of their subject these philosophers diverge widely from their English counterparts and from many of their colleagues in America. It would be regrettable for these two schools simply to ignore one another. I have therefore attempted in the following examination of the work of one of the leaders of this school, Dr. Nelson Goodman, to show why it appears to me that his investigations do not have the point which he supposes them to have. I shall be concerned wholly with Goodman's book, *The Structure of Appearance*,[1] which I shall refer to as *SA*.

SA presents the outlines of a language constructed in the economical manner usual in formal systems; that is to say, besides the machinery of logic, there is a minimum of primitive expressions, and the main purpose of the book is to demonstrate how many concepts can be defined in terms of these primitives. The language is phenomenalistic and therefore presumably not to be imagined as being used for communication; it is a language which *one* man could use to record his experiences. Goodman gives brief informal explanations of the meanings of the primitives; he does not consider it necessary to give an account of how the hypothetical users of the language would come to learn the senses of these expressions. It seems legitimate to inquire, however, just how one who speaks this language is to

[1] Cambridge, Mass., 1951.

be thought of as using statements containing these primitives. In what circumstances does he assert them? In particular, does he recognize the possibility of a mistaken assertion, or does he regard his statements as incorrigible?

The system also contains nonlogical axioms. Admittedly Goodman proposes using a device invented by himself and W. V. Quine for eliminating all such axioms, but the failure of this device to achieve its purpose has already been pointed out by C. H. Langford.[2] We may perhaps consider the axioms to be generalizations from the set of all true statements; but then of course the problem remains as to the ground for Goodman's assurance of their truth.

The only explicit discussion of the incorrigibility question given by Goodman is in connection with identity judgments. Such judgments are not verifiable: "If I say that the green presented by the grass now is the same as the green presented by it at a certain past moment, I cannot verify that statement by reviving the past presentation for fresh inspection."[3] Hence we must regard such judgments, he says, as "decrees." But although no one can ever demand that I reverse a particular such decree, I may in fact find it convenient to do so: thus I might be able to hang on to all the decrees I had made only by giving up "the exceedingly useful principle of the transitivity of identity." Rules cannot be right or wrong; but they can conflict with one another, and in such a case I must go back on at least one of them, although it is up to me to decide which one.

This discussion occurs before one of the three primitives—"*M*"—has been introduced, and it is in consequence misleading. From it it appears that the users of the language make assertions of identity between qualia, without recognizing anything that plays the role of evidence for such an assertion; that there is nothing that would count for them as showing that any particular such judgment was mistaken; but that in order to preserve transitivity they will make an arbitrary decision to abandon some such judgments. (For a proper understanding of the language we should need also to demand an account of the training that led them to make the original assertions in certain circumstances;

[2] *Journal of Symbolic Logic*, VI (1941), 154. [3] *Op. cit.*, p. 99.

but perhaps we can imagine this for ourselves.) In fact, the discussion is intended only as an illustration. When we reflect on the similarity of the theory of decrees to the thesis of Quine's "Two Dogmas of Empiricism,"[4] which is intended to apply to *all* language and with which Goodman is sympathetic, we realize that Goodman is not giving us a particular account of the way in which his system functions but is rather applying a general theory to a special case. Thus, on his own principles, he has still given us no information about the way in which his language is to be envisaged as being used. Someone who does not share his views—who thinks it possible that a form of statement should be so used that the question of later retracting an assertion of that form never arises, or who thinks it possible that for some other form of statement there may be circumstances in which misunderstanding would be the inevitable price of failure to retract such a statement—may regard Goodman as having provided some such information: but Goodman himself, thinking that such possibilities are ruled out in advance, cannot claim to have done so.

Goodman's primitive two-place predicate "*M*" ("is not noticeably different from" or "matches") is nontransitive, as accords with its intended meaning. Goodman relates it to identity by adopting as a formula of the system that quale x is the same as quale y if and only of x matches all and only those qualia which match y. (This is an axiom, not a *definition* of identity.) Goodman opens his discussion of decrees by remarking that an identity judgment cannot be verified: but if we were to regard the matching judgments as incorrigible, then they would provide evidence for or against judgments of identity.

This is the way in which we naturally think of the system of *SA* if we try to imagine it actually functioning—the matching judgments as basic and the identity judgments as made on the evidence of the matching judgments. That is, we think of the matching judgments as the spontaneous reactions to experience, the judgment that a is the same as b as being made as a result of the observation that in all the matching judgments so far

[4] In *From a Logical Point of View* (Cambridge, Mass., 1953).

made, "a" is substitutable for "b" without change of truth value. But Goodman insists that his earlier account still applies: if I have made three judgments of the form "$a = b$," "$\sim M(a, c)$," and "$M(b, c)$," then it is up to me whether I drop the identity judgment or one of the matching judgments.

There is another reason, besides his general theory of language, why Goodman should say this. He uses the relation of matching as the basis for the ordering of qualia; and he does this with some confidence that it will produce either the same results as have been obtained by other methods—such as the color sphere or the distinction between hue, brightness, and saturation—or else recognizable improvements on these results. If matching judgments were incorrigible, then there would certainly be no ground for this confidence: it might be that one absolutely wild matching judgment was made, and this would suffice to throw the ordering out badly. In the section on decrees, Goodman mentions this possibility, that what he calls a "perverse" decree may be made, but points out that conflict will probably arise with other decrees and that it will almost certainly be the perverse one which it will involve the least trouble to drop. But when we are dealing with matching judgments, this does not seem an adequate answer. Suppose the conflict is the one imagined in the last paragraph, and in fact it is the judgment "$\sim M(a, c)$" which is "perverse": what guarantee have we that it is this one that will be dropped? Even though, according to all my other matching judgments so far, a matches all the qualia other than c that b matches, only a preconception about the kind of ordering we expect to find can lead us to reject the possibility that $(x)\ [(M(a, x) \leftrightarrow M(b, x)) \leftrightarrow x \neq c]$; whereas the whole point was that the matching relation was supposed to provide a *basis* for the ordering.

In any case, a wild matching judgment need not be an example of "perversity"—it might for instance be a case of what *we* should call a mistake of memory, a case in which a man made a mistake about what color a thing had appeared to him at some dast time. One might suspect that Goodman's assurance about the color map to be constructed from the matching judgments came from a lurking idea that what is given is not the judgment

I actually make about whether a color that I saw a long time ago—say ten years—looked the same as a color which I can see now but the judgment that I *should* make about this question if I could see the earlier color again. But of course Goodman cannot give such an explanation: for what would it mean to say here "If I could see the same color again"?

In fact, Goodman has an answer to all these objections which is not clearly stated in his book. We have a place in ordinary language for speaking about a mistake of memory about what color a thing *looked* (as well as about what color it *was*); for there are circumstances in which one would say, "It certainly must look the same as it did before, and therefore you must be remembering it wrong": we appeal here to physical conditions under which we say that the look of the thing cannot have changed. When, however, philosophers speak, as Goodman does, of constructing a material-object language out of a phenomenalist language, they usually wish to exclude appeal to physical circumstances in the determination of the truth value of statements about appearances: the notion of a memory mistake is therefore usually banned from a phenomenalist language. In private discussion, however, Goodman has repudiated this position: he has explained that we may imagine his matching judgments as being rejected for precisely the kind of reason that *we* might conclude that a mistake of memory (about appearances) had been made.

Goodman has claimed that his theory of matching provides a basis for a psychological investigation of the ordering of sensations which shall be without presuppositions. Inspired by his work, experiments have been carried out by Professor Eugene Galanter of Harvard in which the subject makes matching judgments, and the experimenter identifies the sensations by identity of stimulus. In such an experiment, there are still presuppositions; but the old presupposition that the order of the sensations shall correspond to the physical order of the stimuli has been dropped. But we have seen that if there is to be *no* appeal to physical conditions, the resulting ordering may be quite wild; and Goodman's explanation merely admitted the principle of appeal to such conditions. Nothing definite has thus

been accomplished until Goodman lays it down to precisely what kinds of physical condition he envisages appeal as being made in deciding whether to drop or retain matching judgments.

A more philosophical difficulty is the doubt that is raised as to the purpose of Goodman's construction of his system. The physical considerations which lead us to say that the appearance of something cannot have changed are after all quite complex. If we have to imagine that it is partly by reference to such conditions that matching judgments are made or rejected, then the order in which Goodman's constructions proceed must diverge from that in which anyone could actually learn this language. Although the development of a material-object language out of the phenomenalistic language is mentioned in *SA* as a remote ideal, in fact the user of the language will have to master quite complicated physical concepts before he can use correctly the purely phenomenalistic part. We are left wondering what was the point of constructing a system in which "*M*" was a primitive.

Goodman might reply that although it is in practice inconceivable that anyone should learn his language in the order in which he has constructed it, nevertheless there remains an interest in showing that the language *can* be constructed from this particular basis; here a comparison might be made with the procedures of mathematicians and logicians. This is a fallacious analogy, because the purpose of the construction is so different in the two cases. The interest, for example, of Quine's formulation of number theory in terms of a single primitive is that such a system might be metamathematically simpler to handle than one with two primitives; on the other hand, someone whose interest was to study the *philosophical* foundation of arithmetic would not base his investigations on so complex and unintuitive a concept. But Goodman is not aiming at facilitating proofs or in exhibiting the relations between his system and others: his object is philosophical. To achieve such an object we should require that the primitives of his system should represent concepts which could be grasped first, before any of the concepts to be constructed out of them. If these concepts, to be defined formally later, have to be thought of as being tacitly appealed to in the explanation of the primitives, then

Goodman's system does not successfully lay bare the logical relations between them and the primitive concepts.

In order to interpret Goodman's system, we have to understand what the basic units, qualia, are. Qualia are such things as colors, places, and times; we have thus to inquire what it is, for example, to talk of *one* color, what Goodman would mean by saying that I was seeing the same color now as I was seeing five minutes ago. Goodman states the criterion of identity for qualia in terms of matching. This criterion would seem perfectly intelligible if we were discussing colors as physical properties. For phenomenal colors, on the other hand, a criterion of identity has been stated, but no explanation has been offered of what this criterion is to be applied *to*. The principle that no two different qualia match precisely the same qualia appears as part of the system (presumably as an axiom): in this formula the condition under which quale *a* and quale *b* are said to be identical is stated in terms of their matching *qualia*. It thus appears impossible to use this principle to help us to understand what the interpretation of "quale" is supposed to be; we should have already to know what a quale was before we could apply the principle. If physical color (or even the color a thing looked in a certain light) were in question, there would be no difficulty: we should be applying the test to, let us say, rolls of cloth. The criterion of identity for the color of a roll of cloth rests on the recognition of the identity of a roll of cloth: it is because we can tell when we are dealing with the same roll as before that we can make sense of the idea of seeing which rolls match which in color. What are we applying the criterion to in the case of qualia?

The principle that no two different qualia match the same qualia is one case where Goodman's general project of getting rid of nonlogical axioms in favor of definitions which have the same effect looks plausible. We might, that is, simply introduce a definition of, say, a "quality" as a sum of qualia each of which matched all and only those qualia matched by the others. If then two qualities are said to match if every quale of which one is composed matches every quale of which the other is composed, the principle, with "qualities" substituted for "qualia," follows from this definition.

If now we were to define "quality" within the system in this way, we should still have to understand what qualia may be, in order to give an interpretation to the system; for qualities were defined in terms of qualia. We have therefore once more to ask what is the criterion of identity for qualia; what it means to say that one is confronted by the same quale again. It here seems ridiculous to give the same criterion as before, in terms of matching; we should be doing the same work twice over, once outside the system in explanation of "quale" and once inside the system as a definition of "quality." But in fact we do not now need to give a criterion of identity, in this sense, at all: there need not be such a thing as recognizing a quale again, any more than there is such a thing as hearing the same peal of thunder again. Qualia could, so far as the result of our definition of "quality "is concerned, be things that one experiences only once. Imagine for simplicity that there are only four visual-field places, *A*, *B*, *C*, and *D*. Imagine also that I am looking at a blue sky which appears to me uniform and that I look at it for two units of Goodman's time, during which the color appears not to change. Suppose then we distinguish four color presentations in the first moment, say *A*1*c*, *B*1*c*, *C*1*c*, and *D*1*c*, and four also in the second moment—*A*2*c* to *D*2*c*; and we regard these eight color presentations as all distinct. Analogously we recognize eight place presentations—*A*1*p* to *D*2*p*—and eight time presentations—*A*1*t* to *D*2*t*; though some of these match, they are again all distinct. If now we call these entities "presentations," the result of substituting "presentation" for "quale" in the above definition of "quality" still leaves qualities as precisely what Goodman means by "qualia."

That is to say, if Goodman were to follow his own principle and transform into a definition the axiom that no two qualia match just the same qualia, the resulting system could just as well have a particularistic basis as a realistic basis; indeed better, as far as an understanding of the system is concerned. With a realistic basis, the matching principle has to play a double role, within the system as an axiom or definition and also outside the system as a nonformal explanation of "quale." Moreover, it is then an illicit type of nonformal explanation, since it supplies

a criterion of identity without explaining to what the criterion is to be applied. In the system which results from substituting presentations for qualia as the basic units, nonformal explanation is separated from formal definition. Qualia are *defined* formally in terms of presentations; the explanation of "presentation" will be given wholly outside the system. The problem of what this explanation would look like is not introduced, but merely brought to the surface, by the proposed reconstruction of Goodman's system. Presentations are to Goodman's nominalistic phenomenalism what molecule-moments are to Quine's nominalistic materialism.[5] If anything can be said to be "constructed," it is Goodman's qualia: what I am suggesting is that the construction should be carried out explicitly within the system; the problem of what they are constructed out of was already there, although hidden.

I am not here saying that in order to have a concept (e.g., that of a quale) with which is associated a criterion of identity, one has also to have the concept of the kind of thing (e.g., a presentation) to which that criterion is applied; one might simply be shown how, and to what, to apply the criterion, without thereby coming to have the concept of, e.g., a presentation. But in default of our being shown, it must be explained to us to what the criterion is to be applied. Besides, Goodman is not constructing a language of an ordinary kind, to be taught by ordinary methods whose success is their justification: he is constructing a *system.*

The reconstructed system would be an unwieldy one, in view of the triplications of the basic individuals—*A1c*, *A1p*, and *A1t*. One could not dispense with this triplication without distinguishing three matching relations—color matching, place matching, and time matching; and this would go against the economy that Goodman has so much at heart. (The suggestion has been made by several of Goodman's critics that the number of basic individuals needs to be taken into account in assessing the simplicity of a system, but Goodman has stated that he can see no force in this idea. But whatever may be thought of my proposed

[5] See "Identity, Ostension and Hypostasis," in *From a Logical Point of View.*

reconstruction of the system of *SA*, it is not intuitively clear that we should regard this reconstructed system as more economical than the further reconstructed system obtained by identifying *A*1*c*, *A*1*p*, and *A*1*t*, and introducing three matching relations. Further, Goodman claims to be able to ignore the nonlogical axioms of a system in assessing its simplicity, because of his device for eliminating such axioms; but it is again not intuitively clear that a system in which all possible information could be stated in a smaller number of noncomplex statements—decrees—than in another would not be more economical than the other. Thus if we distinguished different matching relations, we should not need to make any decrees corresponding to "*A*1*p* does not match *B*1*c*.")

Goodman's notion of time qualia provides a particularly striking instance of his puzzling attitude to the permissible bases of a system such as his. He insists, rightly, that we must recognize private as well as public time. (Rightly so, because it is by no means necessarily the case that what seemed to one person to happen before some other event will seem to everybody who witnessed both happenings to have preceded the latter one. If such discrepancies were frequent, instead of extraordinarily rare, our whole concept of the public time order would be different.) There is a clear sense in which facts of temporal order may be said to be "given" to us: we do not only infer that one event, which we remember, must have happened before some other event which we also remember; we frequently remember the one event *as* having happened before the other. Goodman says, "*Phenomenal* ('private') time seems to me no more 'relational' than phenomenal color"[6]; as against this one would naturally retort that what we are *given* is given in terms of the relation of temporal precedence, not in terms of a number of time qualia. We want to say that we not only judge two things to be of the same color, or of different colors, but also recognize that each color has a particular *character*; but that, by contrast, while we judge that one thing happened before another, no moment has, as such, a character different from that of other moments—only

[6] *Op. cit.*, p. 284 n.

the things that happen at some moment have a character of their own. Sometimes people say that in saying that something is green I am saying that it is of the same color as some standard object which was used to teach me what the word "green" meant. Part of what such people wish to express is that color-words can be taught only by example; another part is that to be taught color-words involves being taught a means of recognizing sameness of color. But the obvious objection to their way of putting this is that when I ascribe a color to something, I am not necessarily comparing it with anything else at all: I need not have in mind any other object as the second term of the relation. By contrast, if I make a judgment about when something happened (or when I remember it as having happened), I necessarily relate it explicitly to some other event; we have no other way of saying when a thing happened than by saying that it was before or after some other event. There is no phenomenal calendar.

In raising such objections against Goodman, one is liable to argue at cross purposes, because one mistakes the kind of foundation Goodman thinks permissible for a system such as his. If the point is proved, it would not, on Goodman's view, invalidate his notion of time qualia. He does not claim qualia as fundamental to anything but his system. Provided we can give an explanation of time qualia by any means, however complicated, Goodman feels himself at liberty to use them among the bricks out of which his system is built. It seems fairly natural to allow colors as among the basic individuals of the system, in that we can imagine people learning proper names of colors solely by ostension. On the other hand, it seems unnatural to allow time qualia (moments) among the basic individuals, in that we cannot imagine people learning proper names of times except via definite descriptions of the kind "the moment x at which such-and-such an event took place," and to frame such a definite description we should need to have already at our disposal a great part of the language. In explaining that on which the whole structure is based, we are thus allowed to appeal to concepts whose formulation will appear very late in the system; the fundamental concepts need not be ones which we can even conceive anyone's

taking as "primitive," in the sense that they were the concepts in terms of which his other concepts had been conveyed to him.

To speak in this way, however, is perhaps to give a false impression. Although the "basic individuals" of the system are qualia—colors, places, times, and so on—names of these qualia are not among the primitives of the system. The speakers of the language do not make decrees of the form "Color *a* occurred with the sum of place *p* and time *t*" (i.e., "Color *a* occurred in place *p* at time *t*"), or "Color *b* matches color *c*," or "Place *r* is identical with place *s*," where "*a*," "*b*," "*c*," "*p*," "*r*," "*s*," and "*t*" are primitive proper names; there are no such primitive proper names. Rather, they have to frame their decrees by means of definite descriptions. Such a definite description might be of the form "the color which occurred at just two times in place *p*," where "*p*" is again a definite description. How are "color," "place," and "time" expressed, since these are not primitive notions? Goodman has a general definition of category: individual categories have to be specified by reference to peculiarities of their order maps. Moreover, clearly *some* definite descriptions of qualia will have to include no other such definite descriptions: these will have again to be formulated by reference to the order map, which can be done if that map is sufficiently asymmetrical. But how are these order maps constructed? On the basis of the judgments as to which qualia match and which do not match. Furthermore, such maps cannot be constructed without a set of judgments of identity, since before we have these we do not know which definite descriptions denote the same quale; a map constructed without reference to any judgments of identity would contain far too many points and would be far too complex, since it would not contain the matching judgments which followed from identifications. But both the matching judgments and the identity judgments have to be framed in terms of definite descriptions which ultimately refer to the order maps constructed on the basis of these judgments.

I complained earlier that, on Goodman's final explanation of the matching relation, this notion had to be explained partly by reference to complex physical concepts and that this seemed to vitiate the plan of taking "matching" as primitive. We see

now, however, that, by whatever process they learned to use the term "matches," the speakers of the language could not even make a statement that some quale matched another without using expressions defined much later in the system. Furthermore, these expressions are in part ones invented by Goodman and explained by him in terms of matching. Since no alternative explanation has been provided, we have no way at all of knowing how the speakers of the language did come to learn it; for the route provided by Goodman is obviously circular: there seems a strong suspicion that it is a language that could not be learned at all.

Goodman remarks that we cannot rely, for constructing definite descriptions of time qualia, on having at hand in the system a predicate signifying temporal precedence (this would be mentioned only in the nonformal explanation of "time quale"). He discusses the problem of formally defining "before" and "after": he says that this will be no more difficult than defining "darker than" among colors or "to the left of" among places. All that we have to do is to find moments uniquely specifiable in terms, say, of the colors which occur at them and such that one is known to be earlier than the other. At this point someone might become very puzzled about the purpose of the whole procedure. What does it mean, he might ask, to say that we *know* one moment to be earlier than another? Surely we are supposed to be as yet without any expression for "earlier than." This confusion is the result of Goodman's using "we" sometimes to refer to hypothetical speakers of his language, sometimes to the readers of his book. What a speaker of the language knows is expressed by the axioms, the decrees he has made, and their logical consequences. The readers of *SA*, on the other hand, are trying to follow Goodman's attempt to prove that there could be such a language, fulfilling a certain condition; and Goodman feels himself entitled, in proving this, to appeal to any knowledge which those readers may possess. The condition which the language is to fulfill is not merely that in it various nonlogical predicates and names should be definable in terms of the primitive predicates; but the more curious one that *we*, who do not speak the language, should be able to work out

from the definitions the interpretation of any of these predicates and names, given the interpretation of the primitives and having the knowledge that we do have. Thus, for instance, the speakers of the language might construct the order map for time qualia, which would presumably be one-dimensional; then provided they can frame definite descriptions for some two distinct time qualia, they can clearly define "before" and "after" by reference to them. If, however, *we* could not recognize which time qualia these descriptions denoted, we should not know which of these two defined predicates meant "before" and which "after."

Goodman's procedure is to get as far as he can by citing the actual definitions in terms of the primitive predicates; thus, for example, the general definition of "category" (save for necessary ad hoc rectifications) can be justified without appealing to knowledge which the reader may possess. Later definitions cannot actually be given: Goodman has to content himself with saying such things as, "To define each individual category, we need only discover some peculiarity of it that can be described within the system; for example, a given category might be defined as . . . the one that is arrayed in the form of a double pyramid."[7] Such definitions cannot be cited in the book, since the knowledge on which they would rest is of episodes in the phenomenal life history of each reader. Goodman therefore seeks to show merely that such definitions *could* be given. Now since there are only finitely many qualia, we might object that we know offhand that any predicate at all *can* be defined simply by listing the qualia or pairs of qualia to which it applies. (This admittedly presupposes that we have shown that it is possible to frame a definite description for each quale.) It might be retorted that such a procedure would be without interest: we wish our definitions to be as general as possible. But this is not the kind of explanation that Goodman likes. He prefers some sharply defined criterion; and he is precluded from finding any such along these lines, since he expressly allows that a definition may be framed by reference to any facts we may happen to know, and he states, for example, that each sense realm (visual, auditory,

[7] *Op. cit.*, p. 235.

and so forth) can be defined individually as a sum of certain categories and that we may then define "realm" as a general term by enumerating the various realms. In order, therefore, to avoid triviality, Goodman adds the stipulation that *we* should always be able, from the knowledge that we possess, to work out the interpretation of each defined expression. This stipulation admittedly restores the difficulty to the task of constructing the system, but at the cost of making the system pointless. Goodman is solving a quite artificial problem; certainly the speakers of the language would have no such problem to solve. The interesting part of the construction is that which can be stated explicitly—the definitions which can be cited and shown to be apt, not merely proved to be possible. It is of course sometimes worth pointing out that, once we have achieved the definition of a certain relation, we could define some further relation in terms of it by reference to, say, just one individual; thus, given that we have linearly ordered the series of moments, we could define "before" and "after" by reference to just one individual (the earliest or the latest). It would also be of interest to show that a language which could not be exhibited explicitly was *possible*, provided that the way in which the language was constructed was such as to make the formation of concepts by those who spoke it seem intelligible to us; but this, we have seen, is a notion for which Goodman has no use.

If we confine our attention to those definitions which can be stated explicitly, what can we say that the enterprise achieves? Goodman has claimed that thereby the logical relationships of the defined concepts to the primitive concepts are displayed accurately and in detail. It is true that to some extent the framing of such definitions brings out features of these logical relationships; but the claim cannot in general be substantiated. This is so for two reasons. First, as I have tried to show, in explaining nonformally the nature of the basic individuals, Goodman has recourse to concepts which are to be defined much later in the system, or even to concepts which are not phenomenalistic at all. This would not matter if we could see that it would be theoretically possible to get someone to grasp the basic concepts *first* and then to build further concepts out of them in the ways

Goodman suggests; or even if it were possible to conceive some order, other than that in which they are presented in *SA*, in which the concepts might be taught; but this, as I have also tried to show, is not even theoretically conceivable. The impossibility of the former is particularly evident when we reflect that someone who learned the language of *SA* as, so to speak, his mother tongue would have to *begin* with the concept of a quale, under which the concepts of a time, a color, and a smell are comprehended, but would be supposed to want these latter concepts *explained* to him, in terms of the ancestral of the matching relation. (Think also of trying to teach someone "*W*" from scratch.) The fact that the concepts which are later to be defined within the system, some of them only when a physicalist language is derived from the phenomenalist one, would have to be used in order to get anyone to grasp the primitive concepts out of which the whole system is constructed means that the system does not properly display the logical relationships between the primitive and the constructed concepts; for some features of this relationship are shown by the role which the primitives play in the definition of the constructed ones, while other features of it are shown by the role which the constructed ones play in the explanation of the primitives.

It is often of interest to show that a mathematical theory may take different sets of primitives as a basis, and it is probably the false analogy with mathematics that led Goodman to suppose that his formal criteria of simplicity were the only standards for judging his choice of primitives and that the philosophical interest would remain the same for any set of primitives of equal "simplicity."[8] But in mathematics, whatever the primitives, we know in what circumstances a theorem is asserted—namely when a proof is given. Goodman's system, on the other hand, is intended to express statements asserted in response to experience. To understand the point of the system we have therefore to grasp what the connection is between the experience and the assertion, for example, what training in the use of the language resulted in the propensity to assert statements of certain forms in response

[8] Goodman has recently disclaimed this view: but it is impossible to tell from *SA* what other standards he is using.

to experience of certain kinds; and it is this of which no satisfactory explanation is given—or, it may be suspected, could be given.

Goodman makes a fundamental mistake about the criterion of success in formulating his definitions. He argues that, even apart from his own suspicion of the concept of sameness of meaning, it is unnecessary for him to hold that what he defines has the same meaning as the corresponding expressions of ordinary speech. All that is necessary is to show that the defined predicate has an extension corresponding with that of its opposite number in ordinary language. (Goodman's criterion is in fact more subtle than this, but the refinement is not in point here.) We accept this idea quite readily, being familiar with the observation that in, say, defining the real numbers as Dedekind sections, one does not wish to say that a Dedekind section was what we formerly "meant" in speaking of a real number; all we need is to show that every statement involving real numbers is expressible in terms of Dedekind sections with preservation of truth value. In defining mathematical concepts, however, we never rely on purely contingent properties of the objects concerned (we do not, to give a crude example, define "9" as "the number of the planets"); all our definitions are in purely mathematical terms, and thus our definitions are always either necessarily adequate or necessarily inadequate. Goodman, on the other hand, interested not in meaning but only in truth values, is prepared to select contingent features of things in order to provide a definition; the features selected, being private, will often have to be merely indicated rather than stated. Insofar as Goodman does this, he cannot claim to have exhibited the logical relationships of the concepts with which he deals, nor to have shown in each case how to frame definitions acceptable to more than one person; and the point of what he has done is obscure.

This hangs together with another fault in his approach. Philosophical problems often take the form of our seeming to be faced by a fact of a peculiar hardness. This is often owing to our using a single form of expression—such as "dimension"—over several quite different categories of things, with very different applications in each; we seem to state ultrahard facts of this

kind when we say that space has three dimensions, the visual field two, time only one. Now Goodman's system displays a difference between concepts like those of color and those of size or shape. But because it blurs equally great differences between other concepts, it not only fails to provide an accurate diagram of the logical relationships between these concepts, but it even gives rise to new philosophical problems which would not appear if we used a more normal method of representation. Goodman represents colors, smells, places, and times as all on the same level, all of the same general kind; by means of his notion of "occurring with," the very different concepts of occurring in a certain place and occurring at a certain time are assimilated to one another. As a result, new synthetic a priori truths come to light to puzzle us. For example, Goodman says that once we had defined "category," we could define the category of times as that a member of which occurred with every other quale. If we look at times as just some qualia among many, this may provoke wonder: we might ask why we cannot imagine a color occurring with (at) no particular time, just as we can imagine a time occurring with no particular sound. Again, Goodman's definition of a category in terms of the ancestral of the matching relation seems less likely to need "ad hoc rectification" in the case of times than in that of colors. A time which stood aloof from all other times appears incomprehensible, whereas we can easily imagine a world in which there was just one shade of red, and the only other colors were blues and greens. (Here Goodman seems to rely on what is a contingent fact for colors, but a necessary fact for times, to justify his definition.) Or again: we can imagine a world in which colors formed a linear series (a black, gray, and white world, say), but not a world in which times formed a two-dimensional array. The way in which these problems arise shows that Goodman's system cannot lay claim to exhibiting the concepts with which it deals in their appropriate logical pattern in such a way as to dispel the philosophical problems they have in the past provoked.

The constructionalist's desire to turn philosophy into an exact science leads him at every point to substitute tasks whose criteria for success are precise for those in which success is impossible

to assess with complete objectivity: while it is true that if philosophy consisted wholly in tasks of the kind the constructionalist sets himself, it would be an exact science, he forgets to ask at each point what value or interest lies in performing those tasks at all. When I know, for instance, that provided the facts are sufficiently accommodating (e.g., that each category will have a describable peculiarity enabling me to pick it out), I should be able to define by means of a certain logical vocabulary the expression "is a color" in terms of a relation which has not been at all precisely described but is something like the union of such relations as looking the same color as, seeming to be simultaneous, and so on, then I certainly do not understand the term "color" any better; for it is, to say the least, no more obscure to me than "matches." What then have I learned? What, for example, do I understand about the world that I did not understand before? Admittedly, someone hostile to mathematics could ask similar questions about various mathematical theorems; but then philosophy has never been supposed till now to have the kind of interest that mathematics has. One thing is certain: in mathematics a promise that a certain question could be answered provided that certain structures turned out to be sufficiently dissimilar would never be tolerated as a solution to a problem; especially when it could never be known whether these structures would or would not so turn out.

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CONCEPTUAL SCHEMES IN SET THEORY[1]

THE task of the philosopher of mathematics is to provide for a foundation for mathematical reasoning. It is to answer the questions "What are the objects of that inquiry known by all as mathematics?" and "What are the ultimate criteria by which the mathematician's thinking concerning those objects can be judged?" It is a widely held view that the task of the logician is to answer these questions by presenting a formal system as a foundation for mathematics or, rather, various formal systems for various mathematical theories. According to this view, a formal system is a foundation not only in that it offers a precise criterion for proof but also in that it securely grounds the ultimate objects of mathematical reasoning as the elements of the formal system itself, namely, signs and their concatenations. Now this view is held by many logicians and philosophers of mathematics and plays a significant role in some aspects of their work. I do not claim that it has been clearly formulated by any one writer or that I can classify logicians and philosophers of mathematics into two sharply divided groups, one containing those who hold the view and the other containing those who do not. The position of H. B. Curry in his book, *A Formalist Philosophy of Mathematics*,[2] comes nearest to what I call the formalist position. But for the most part, formalism is a view which is held in various degrees by various individuals.

In a previous paper,[3] I argued that the classical view of mathematics, in which mathematical statements have reference to a domain of mathematical entities, provided a more secure foundation for mathematics than the view which insists that ultimately the status of a mathematical statement is exhausted

[1] This paper was read at the joint meeting of the American Philosophical Association and the Association for Symbolic Logic held at Boston University on Dec. 29, 1955. The last section (which contained some comments on general logic) has been deleted. [2] Amsterdam, 1951.

[3] "Axiomatic Systems, Conceptual Schemes, and the Consistency of Mathematical Theories," *Philosophy of Science*, XXI (1954), 44-53.

in its context in a formal system. Lately I found that my position is similar to positions taken by Bernays and Beth. I shall find it convenient to use some of Bernays' ideas in the exposition of the present paper. I shall discuss set theory from this point of view, trying to show that the logician does not leave himself with nothing to do when he admits that there is something beyond an axiomatic system to which mathematical statements refer.

I

The foundation for mathematics which I have suggested is a conceptual scheme, which is an imaginary universe of entities, or model, together with a certain language. The ordinary semantical relations between the universe and the language are enough to determine in principle the truth or falsity of every statement in the language, according to Tarski's concept of truth. I shall assume in this paper that the language is of the usual symbolic type. Thus the quantification of a formula with only one free variable is true if and only if the formula is true of every entity in the universe; and the existential quantification is true if and only if the formula is true of at least one entity in the universe. The other possible foundation for mathematical reasoning is a formal system. For the purposes of this paper, it is advantageous to consider the formal system as divided into two parts: the language, including the listing of symbols and the specification of well-formed formulas; and the proof technique, including the specification of the axioms and rules of inference. In comparing a conceptual scheme with a formal system of a given mathematical theory, the language of the conceptual scheme can be assumed to be the same as the language of the formal system.

The conceptual schemes of some mathematical theories demand quite a bit in the way of intuition. Since intuition is a deceiver, one might argue that conceptual schemes should be dispensed with in favor of formal systems. This argument is the basis of the *formalist position*, which I now define as the position that formal systems are the proper foundations for mathematical theories and that conceptual schemes are not to be taken seriously. It is possible for someone to hold a formalist position with regard

to some mathematical theories but not others, but I need not take this fact into account, since my argument is that the formalist position is not the best position for any mathematical theory. I maintain that if a mathematical theory is worth studying at all, then it is worth studying as a conceptual scheme. My position is that conceptual schemes are the proper foundation for mathematical theories and that formal systems serve only as vehicles of proof, recommended for their precision and utility. Formal systems are useful but are not ends in themselves, so to speak. I shall call my position the *conceptualist position*, hoping that the usual connotations of this term are not too strong and are not too harmful.

It follows immediately from what has been said about these two positions that the formalist is interested in formal systems only, whereas the conceptualist is interested in both formal systems and conceptual schemes, and hence in their interrelations. Another consequence is that the formalist never asks the question of the truth, in any proper sense, of a mathematical statement; he merely asks whether it is a theorem of his formal system. This fact becomes significant when Gödel's theorem is taken into consideration. Gödel's theorem implies that, for certain important mathematical theories, no matter how a formal system is set up to account for the conceptual scheme, there will always be either statements true in the conceptual scheme and not provable in the formal system or statements provable in the formal system which are not true in the conceptual scheme. In other words, for such a mathematical theory, there is no formal system completely adequate to the conceptual scheme in the sense of having as theorems all and only all the true statements of the conceptual scheme. (This fact, however, I do not consider to be an argument either for the conceptualist or for the formalist. The conceptualist may try to claim that Gödel's theorem is another feature of the inadequacy of formal systems; but the formalist may claim for his side that Gödel's theorem shows even more cogently how the truths of conceptual schemes are beyond our reasoning, and he may argue, à la positivism, that they are for that reason meaningless.)

Conceptual schemes are certainly closer than formal systems

to traditional mathematical theories, as thought of by the vast majority of mathematicians who are unconcerned with foundations. The conceptualist may, therefore, be considered as an apologist for classical mathematics. The formalist regards the traditional theory as a loosely formulated human institution for which a precise and rigid reconstruction must be given. It is not correct to say, however, that the conceptualist takes the traditional theory as it is, uncritically. There are three features of the conceptual scheme which would serve to emphasize the fact that it too is a reconstruction of a traditional theory. First, the language in a conceptual scheme is limited and precisely characterized; the class of formulas is definite. Second, the universe of discourse is precisely limited as the model of the conceptual scheme; mathematical entities outside of the model cannot be referred to. For example, the model of a set-theoretic conceptual scheme may contain a certain collection of entities and yet contain no set whose members are exactly those entities. Third, the semantics of the language is precisely specified, so that every formula without free variables is, in principle, determined to be true or false.

My argument against the formalist position is that one can never know, or have any good reason to believe, that a formal system is consistent, unless it is referred in some way to a conceptual scheme. But if we know that all the axioms of a formal system are true in the corresponding conceptual scheme, and if we know that the rules of inference preserve truth (that is, a statement is true if it follows by the rules from a set of true statements), then we can be confident that the formal system is consistent to the extent that we are confident in the conceptual scheme. This argument appeared in my earlier paper, but that part of the argument stating that a conceptual scheme is reliable is perhaps valid and perhaps not, depending on what mathematical theory is under discussion. In the earlier paper I used only arithmetic as an example, and in this paper I shall discuss a certain version of set theory which is strong enough to require a detailed discussion but weak enough to be called "a weak set theory."

Note that my argument against formalism is that formalism

does not itself provide for any motivation for accepting any particular formal system as a foundation for a mathematical theory, in that it does not furnish even a suggestion that the system is consistent. Curry's philosophy, therefore, is not in strict disagreement with my own, even though he is an outspoken formalist. For Curry is explicitly presenting a philosophy of mathematics in which no account is given of the motive behind the choice of a mathematical theory. For him, the formalist philosophy of mathematics provides the style in which a mathematical theory, once it has been chosen, can be given. He admits that the formalist cannot prove consistency.

II

The formalist position is close to (if not identical with) nominalism, and the conceptualist position is close to traditional conceptualism, which is the view that abstract entities exist only in the mind. I have avoided this formulation of conceptualism because of certain insurmountable difficulties; nevertheless, I am forced to admit the closeness of my position to this particular traditional point of view. Lately there has been a tendency to put all non-nominalist positions under the heading of Platonism, however unrelated they are to anything traceable to Plato's writing. For example, Bernays describes and endorses a position which is practically identical to conceptualism and calls it "moderate Platonism."[4] Moderate Platonism is distinct from what he calls "extreme Platonism," which is close to the traditional position of realism. Extreme Platonism in mathematics holds that mathematical objects (numbers, sets, and so forth) exist in a separate realm and that mathematical statements are statements about this realm. Extreme Platonism is characterized by the feature that the realm it posits is completely independent of our thoughts about it. The paradoxes are enough to refute extreme Platonism, Bernays admits. For example, if we suppose that there is a realm of mathematical objects containing a fixed totality of sets, then Russell's set is a set which cannot be in the totality.

[4] "Sur la platonisme dans les mathématiques," *L'Enseignement mathématique*, 34e année, nos. 1 and 2 (1935).

Given the fixed totality, Russell's set, which is defined in terms of the totality (namely, the set which contains just those sets in the totality which are not self-members), is just as much a set as any set in the totality. Nothing but an ad hoc principle could keep us from recognizing it as a set. But to suppose it is in the totality leads to contradiction, i.e., Russell's paradox. The lesson is, for Platonism, that no fixed totality represents all the mathematical objects which there could be. Extreme Platonism is refuted but not moderate Platonism, which renounces the idea of a fixed totality of all the objects of all mathematical discourse and maintains that the mathematician creates the objects of his thought. Moderate Platonism, as it is conceived by Bernays, seems to accord very well with my own position that conceptual schemes are the proper foundations for mathematical theories. It seems to me that sets, in order to become elements of models of set-theoretic conceptual schemes, must be created by what Bernays calls the *quasi-combinatorial* process, which I shall try to explain in some detail.

Suppose we are given a collection of, say, ten objects, and suppose we wish to examine all the possible ways in which a person could select some of the objects and reject others. This kind of problem is at the basis of an extensive class of mathematical problems known as combinatorial problems. The number of possible choices is, of course, 2^{10} or 1,024, if we include both the possibility that none of the objects may be selected and the possibility that all of the objects may be selected. What is important for us here is that given the original ten objects, 1,024 new objects are created by this combinatorial process. The 1,024 possible choices are objects for the mathematician's thought, just as the original objects are. It is also possible to say, depending on one's habits of philosophical speech, that the objects are created by thought. If we suppose that the original objects are sticks of wood, then with 1,024 pieces of string it is possible to construct a physical model representing the totality of combinations, namely, by tying each string to certain of the sticks in such a way that no two strings are tied to exactly the same sticks. But the mathematician does not find it necessary to build, or even think about, a concrete model in order to talk about

the totality of possible choices. He finds it convenient to talk of these choices, in the same way that he talks of physical objects.

According to Bernays, the sets of set theory are generated in an analogous fashion. He therefore calls them quasi-combinatorial objects. The supposition of moderate Platonism is that one can consider the totality of all sets of a given totality of objects, even though the given totality is infinite. Let us suppose that the given totality is the infinite totality of non-negative integers. Once this totality is assumed, a new totality consisting of all *sets* of non-negative integers can be generated in the same fashion that the totality of all choices from the ten objects is generated. One suffers, here, from the fact that there is no physical model for the non-negative integers and, therefore, no physical model for all their sets. And one is forced to admit that one does not have the intuitive clarity which guarantees the legitimacy of the generation of the totality of all sets of non-negative integers that one has in the case of the generation of all choices of the ten objects. The doubt is stronger in some philosophers and mathematicians than in others; but my own doubts concerning it are not so great that I refuse to consider mathematical questions about it.

But let us review some of the doubts concerning set theory which some philosophers and mathematicians have had and examine how they might apply in the case of the domain of the non-negative integers and all the sets thereof. Many regard sets as entities which have to be constructed in an ordered fashion. The principle by means of which they are constructed is the principle that, given any conceptual scheme C and given any statement in the language of C, $F(x)$, which has just the free variable "x," there is a set whose members are just those elements of C for which $F(x)$ is true. This principle is often called the predicative principle, since the set is *defined* in terms of a totality of which it is not a member. In the literature, set theories which can be justified by this principle and other principles not more controversial are called constructive. One finds consistency proofs, so-called, of these systems in the literature, but no one seems to believe that the nonconstructive theories are *demonstrably* consistent, not even those logicians who use them

most frequently. This fact seems to indicate that the intuition of logicians seems to weaken when it encounters nonconstructive set theories.

The domain of non-negative integers and all sets thereof is a nonconstructive set theory, in fact the weakest nonconstructive set theory in the literature. In this domain there must be a set of all numbers x for which $F(x)$ is true, even when the range of variables includes this domain itself; in other words, a set can be defined in terms of a totality which includes itself, and so this set theory has an impredicative principle. No way has ever been found which justifies the theory by means of predicative principles, and there is good reason to believe that no way ever will be found. The quasi-combinatorial principle or some principle like it must be invoked, which produces the sets all at once, so to speak, and not just one at a time or in sequence.

III

I should like now to formulate as precisely as possible this quasi-combinatorial principle as it applies to conceptual schemes. The formulation will be involved because models as well as the languages of conceptual schemes must be discussed. I shall present a preliminary formulation and then, after some discussion, a second formulation. The languages of the conceptual schemes are assumed to be in the form of modern symbolic logic with predicates, variables, constant terms, truth functions, and quantifiers. The truth functions have the usual interpretation in the model, and so do the quantifiers, where the range of variables includes precisely the objects in the model. The identity predicate has the usual interpretation, and all other predicates are called extralogical predicates. It follows that every formula is true or false for each interpretation of its free variables.

The quasi-combinatorial principle is tentatively formulated as follows. Given a conceptual scheme C with model M and language L, there is another conceptual scheme C' with model M' and language L' such that the (1) through (5) below hold. (1) M' has all the entities of M and for *every possible aggregate* of entities of M it has a new entity which is the set standing for the aggre-

gate. (2) The language of L' contains all the predicates and constants of L and, in addition, a new two-placed predicate epsilon. (3) An atomic formula without epsilon, that is, one which is an extralogical predicate other than epsilon followed by an appropriate number of variables, is true in C', for a given interpretation of its variables, if the interpretation of each variable is an old entity (i.e., an entity of M' which is also an entity of M) and if the formula is true in C for that interpretation; otherwise the formula is false. (4) The formula "$x\varepsilon y$" is true if "x" is interpreted as an old entity and "y" as a new entity representing an aggregate of which the former entity is a member; otherwise it is false. (5) The truth and falsity of nonatomic formulas is determined by means of Tarski's familiar rules.[5]

The appearance of the words "every possible aggregate" in condition (1) is not wholly desirable, since many skeptics could claim that they do not understand the meaning of this phrase any more than the notion of a "totality of sets." The phrase "every possible aggregate," therefore, will be analyzed here, but before proceeding with the analysis I should like to point out the necessity in condition (1) of limiting the new entities of M' to correspond to aggregates of M. Suppose (1) had read as follows: M' has all the entities of M and has exactly one entity corresponding to every possible aggregate of entities of M'. Then we could be assured by reasoning similar to that used in Russell's paradox that there could be no such model M'. The reasoning would show that to the aggregate of entities of M' which are not self-members there could correspond no entity of M'.

To analyze the phrase "every possible aggregate," I should like first to comment that the notion of an aggregate is not troublesome in itself. That is to say, given an entity e in the model and given any two-placed predicate R in the language, it is easy enough to understand what it means to let e stand for the aggregate of elements to which e is related under R; in other words, the aggregate of elements such that "Rxy" is true when "x" is interpreted as some member of the aggregate

[5] These rules first appeared in Tarski's "Der Wahrheitsbegriff in den formalisierten Sprachen," *Studia Philosophica*, I (1936), 261-405.

and "y" is interpreted as e. Thus, in the universe in which we live, the predicate "is listed in" enables us to let a telephone book stand for the aggregate of people in it. The difficulty comes in understanding the meaning of "every possible aggregate."

Let us relax condition (1) for the moment as follows. (1′) M' has all the entities of M and in addition certain entities which correspond to aggregates of entities of M, and no two entities correspond to the same aggregate. If two conceptual schemes C and C' are related as described in (1′), (2), (3), (4), and (5), let us say that C' is a *partial set theory upon* C.

For a given conceptual scheme C, there will be many partial set theories upon C. If C' and C'' are both partial set theories on C, then it is possible that an entity e' of M' not in M has exactly the same members as some entity e'' of M'' which is not in M. I shall say that such entities e' and e'' are *extensionally identical*. Conceptual scheme C'' is *at least as rich as* conceptual scheme C' if they are both partial set theories upon a common conceptual scheme C, and every entity of M' not in M is extensionally identical to an entity of M'' not in M.

It is now possible to reformulate the quasi-combinatorial principle as follows. For every conceptual scheme C, there is a conceptual scheme C' such that C' is a partial set theory on C, and for every conceptual scheme C'', if C'' is a partial set theory on C, then C' is at least as rich as C''. There are three quantifiers here over some totality of conceptual schemes. Now the quantifier of "C" is dispensable, if we are willing to regard the quasi-combinatorial principle as a different principle for every different conceptual scheme C. We can replace the phrase "for every conceptual scheme C," then, by the phrase "for a given conceptual scheme C." The second quantifier, "there is a conceptual scheme C'," is absolutely indispensable in some form; one could hardly object to it without being willing to give up the quasi-combinatorial principle once and for all. The phrase "there is a conceptual scheme C'" can be replaced by the phrase "one can assume by virtue of the quasi-combinatorial principle a conceptual scheme C'." It is the third quantifier which is troublesome. It is difficult to see how to interpret it in a way which does not suppose a totality of all possible conceptual

schemes, which must certainly be what Russell would call "an illegitimate totality." It seems that there can never be a closed totality of *all* conceptual schemes any more than there can be a closed totality of all sets; given any totality of conceptual schemes, we should always be able to construct one which is not in the totality, just as we can always find a set not in a given totality of sets. Yet it seems that we can make certain statements which are true of all possible conceptual schemes; for example, that each must have a model and a language.

In summary, then, the second formulation of the quasi-combinatorial principle can be formulated without the phrase "every possible aggregate," although in doing so one must refer to "all possible conceptual schemes." It does not seem that there is anything we can do for the skeptic who claims not to understand the meaning of the principle. If it is possible for someone to understand it and yet to doubt that it is valid, then it is for this person that the remainder of the paper is written. The question of meaning and the question of validity are of course not entirely separate. One might challenge the validity of the principle on the ground that the meaning is not clear. But in what follows, I am forced to assume that the meaning of the principle is, if not perfectly clear, clear enough to allow a discussion of validity.

IV

It is the quasi-combinatorial principle which, when applied to the conceptual scheme of the non-negative integers, gives us the conceptual scheme of the non-negative integers and all sets thereof. The language of the latter conceptual scheme contains all the arithmetic notions as well as the set-theoretic predicate epsilon. There is an axiomatic system, sometimes known in the literature as number theory in second order function calculus, whose language is the language of this conceptual scheme. I call this formal system T_2.[6] The model of the conceptual scheme is a model for T_2, which means that the axioms, and hence the theorems, are true statements of the conceptual scheme. From

[6] T_2 is more precisely described on page 136 of my paper, "Some Formal Relative Consistency Proofs," *Journal of Symbolic Logic*, XVIII (1953).

this fact it follows that T_2 is consistent. I shall not refer to this train of thought as a consistency *proof*, however, since the reliability of the conceptual scheme is controversial among logicians. Rather I shall call it a consistency *argument*.

Let us examine this consistency argument in more detail. Let us suppose that the only rules of inference of T_2 are logical rules of inference, that is, rules which preserve truth under any given interpretation of the predicates. We suppose, in other words, that if certain statements are true under an interpretation, then any statement which follows from them according to the rules is also true under the same interpretation. Let us also assume that the conceptual scheme has the same language as T_2. Then the argument goes as follows. (1) The axioms of T_2 are true in the conceptual scheme of the non-negative integers and all sets thereof. (2) The theorems are therefore true, since the rules of inference are truth-preserving. (3) Hence T_2 is consistent; for otherwise all statements would have to be theorems, including the false ones.

There are several possible objections to this argument. One might say that the notion of *truth* is not clear. Because of the work done by Tarski and others, however, the logicians who might adopt this counterargument are in a minority. Most logicians agree, I think, that once we have a clear idea of a model, the notion of truth in that model is as precise and as clear as the notion of a theorem in a formal system. Most of those who would object to the argument would claim that we do not have a clear enough notion of the model of the non-negative integers and all sets thereof. Against these I have no further argument except an appeal to intuition. If you say, at this point, that this is no way to do philosophy and that appeals to intuition uncorroborated by reason can lead only to a blind alley as far as philosophical debate is concerned, then I can say only that I share your negative attitude toward intuitive arguments and agree that, in the course of a philosophical argument, the fewer appeals one makes to intuition the better. But if it is necessary to argue intuitively in establishing a point, it is a good policy to acknowledge the fact and to reveal precisely the step of the argument in which an appeal to intuition is made.

The reader can then accept or reject the argument, according to whether his intuition prompts him to accept or reject the intuitive step.

A new philosophical position, somewhere between formalism and conceptualism, has been indirectly suggested by remarks above. This position is important enough to deserve a name, and I shall call it the *denumerabilist position.* Its formulation is as follows: conceptual schemes and not formal systems are the proper foundations of mathematical theories; however, only conceptual schemes whose models contain at most a denumerably infinite number of objects are tolerable. The denumerabilist is in a position to accept only set theories built up by means of constructive principles. He does not have any faith in the quasi-combinatorial principle, since the totality of all sets of an infinite collection must be a nondenumerable infinity, as we know from Cantor's argument. The denumerabilist cannot accept the consistency argument for the formal system T_2, because he cannot accept the conceptual scheme of the non-negative integers and sets thereof. An interesting question is, will the denumerabilist ever know that T_2 is consistent? The Löwenheim-Skolem theorem enters at this point and makes it seem that the answer to this question is not obvious. One is tempted quickly to answer the question in the negative, since the intended interpretation of T_2 is a nondenumerable universe. But the intended interpretation of a formal system is not the only interpretation, and, by the Löwenheim-Skolem theorem, if T_2 is consistent, then it has a denumerable model. The conceptualist, since he knows that T_2 is consistent, is assured of the existence of a denumerable model, but the denumerabilist, as far as we know, has no reason to believe that such a model exists. The question is, will he ever have such a reason? The only answer that can be given in the light of present knowledge is that, although we have no reason to think he ever will, we cannot now say for sure. But this question, although interesting, is not central in this paper. I should like to say only that it is an unsolved problem and that it deserves some attention.

[7] Cf. the argument on page 51 of my paper mentioned in n. 3, above.

It might be noted that of the three positions, conceptualism, formalism, and denumerabilism, the last two are quite close in a certain respect. In fact, I would say, as an aside, that the only sensible interpretation of formalism is denumerabilism. Formalism considers only signs, their concatenations, and rules of proof as given to the intuition. But there are a denumerable infinity of formulas and proofs possible in any formal system. A formalist may want to take a finitist position with respect to the formal system, refusing to admit an infinite totality of formulas or proofs. Nevertheless, it is fair to say that denumerabilism is a sort of upper bound on formalism in the sense that everything that the formalist must allow in the way of intuition the denumerabilist allows. It is my opinion, which I do not have the time to substantiate here, that a formalist and a denumerabilist are not very far apart with respect to their attitude toward the limits of the intuition, even though the formalist declares that formal systems are the proper foundations for mathematical theories and the denumerabilist declares for conceptual schemes. At any rate, the formalist and the denumerabilist both deny that the non-negative integers and sets thereof are a proper conceptual scheme. But here is where the formalist and the denumerabilist differ. The formalist maintains that formal systems do not require justification in the way of a conceptual scheme, and so he would tolerate the formal system T_2. That is to say, he may consider its theorems as interesting results and its as yet undecided statements as interesting problems. The denumerabilist, on the other hand, will not have any reason to consider the system T_2 seriously unless someone constructs for him a denumerable model. Because of my conviction that if a mathematical theory is worth studying at all then it is worth studying as a conceptual scheme, I think that denumerabilism is a tenable position and formalism is not. The conceptualist should realize that, of the two, the denumerabilist is a stronger and more worthy philosophical opponent. It is only in regard to set theory that the conceptualist faces the denumerabilist as an opponent; in regard to arithmetic, as discussed in my earlier paper,[8] the conceptualist and the denumerabilist are allied against

[8] I.e., the paper mentioned in n. 3, above.

the formalist (although I did not mention the denumerabilist position in that paper).

It should be mentioned that, with the quasi-combinatorial principle, one can construct conceptual schemes which justify the formal versions of the simple theory of types and Zermelo set theory.[9] The conceptual schemes are quite close to what motivated and justified the original theories as put forth by Russell and Zermelo. As far as I can see, the justification of these conceptual schemes involves no essentially new philosophical problems which do not arise in connection with the conceptual scheme of the non-negative integers and their sets, even though the conceptual schemes are much stronger mathematically. (For example, the continuum hypothesis has meaning in these conceptual schemes but cannot be formulated in the conceptual scheme of the non-negative integers and their sets.) Interestingly enough, but without surprise, certain versions of the axioms of choice are true in these conceptual schemes. I have been unable to construct conceptual schemes justifying either the Zermelo-Fraenkel set theory (i.e., the version with the axiom of substitution) or Quine's "New Foundations." These are examples of many interesting unsolved problems which are problems for the conceptualist but not for the formalist.

In closing, I should like to remark that the unsolved problems which are problems for the conceptualist but not for the formalist are themselves an argument for conceptualism as against formalism. There is probably not much sense in trying to establish that something is intrinsically interesting, as the matter is wholly subjective. And therefore it is impossible to argue (in the proper sense of the word "argue") that one philosophical position admits of more interesting problems than another. Yet this feature of conceptualism may prove to be more compelling for many persons than my central argument, that conceptualism provides us with a reason to believe that some mathematical theories are consistent. Certainly it will be worth while to discuss some of these unsolved problems in a rather detailed fashion, which I hope to do in a sequel.

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[9] Many of the points mentioned in this paragraph are elaborated in *Les Systèmes axiomatiques de la théorie des ensembles*, by Hao Wang and myself (Paris, 1953). There, a conceptual scheme is called a "modèle intuitif."

DISCUSSION

ATOMICITY AND PROPOSITIONAL ATTITUDES

WITTGENSTEIN describes the atomicity principle thus: "Every statement about complexes can be analysed into a statement about their constituent parts, and into those propositions which completely describe the complexes."[1] It is not our purpose here to provide a résumé of the literature on this topic; we are rather concerned with one attempt, namely Russell's, to accommodate a certain class of statements to the principle of atomicity. The class of statements in question consists of those formulations of what Russell has called "propositional attitudes."[2] An attitude is called "propositional" if it is naturally described by a statement containing a subordinate statement—for example, "Jones hopes Smith is angry," "Jones believes Smith is angry," and so forth. Our discussion will concentrate upon statements of the form "A believes p," although the conclusions arrived at apply equally to descriptions of propositional attitudes (doubt, desire, hope, and so forth) other than belief.

If Wittgenstein's thesis of atomicity holds, then one consequence is that p in a statement of the form "A believes p" cannot function as a unit or subordinate complex. It prohibits, for example, the view that peculiar entities called "propositions" are "objects" of belief attitudes. As Russell puts it, the atomicity principle forbids our saying that the occurrence which makes "A believes p" true is a complex containing a subordinate complex. What Russell seeks, then, in the *Inquiry* is an analysis of belief statements which is compatible with Wittgenstein's principle. The purpose of this paper is to exhibit reasons for regarding Russell's endeavor as unsuccessful.

Consider the statement "A believes B is hot." About this Russell writes:

> . . . to say A believes this is to say that he is in one of a number of describable states, all of which have something in common. One of such states is that in which A exclaims "B is hot!", but there is no reason to suppose that any words are necessarily present to A when he is believing that B is hot.
>
> To say "A exclaims 'B is hot!' " is to assert a series of movements in A's speech-organs; this is a purely physical occurrence, which can be completely described without introducing any subordinate complex. It would seem that

[1] *Tractatus Logico-Philosophicus* (London, 1922), 2.0201.

[2] *An Inquiry into Meaning and Truth* (London, 1948), pp. 167-168.

every other state of A which is a believing that B is hot could be similarly described.[3]

From what we know of Russell's general philosophical orientation, it is reasonable to assume that the basis of the reasoning contained in the above passage derives not merely from the effort to preserve the atomicity thesis but, further, from a preference for a Humean sensationalism; that is, the description of belief and similar cognitive attitudes in terms of feelings and sensations. These latter are relatively easy to describe as compared with the more puzzling propositional attitudes, which, like belief, are sometimes said to take complexes as their "objects." If beliefs, doubts, wonderings, and so forth are capable of analysis into ingredients which are similar to muscle tensions and headaches, qualities of experience obviously including no subordinate complexes to which they "refer," then most of the alleged mystery attaching to cognitive attitudes is removed. This perhaps explains Russell's liking for expressions like "yes feelings."

We should misinterpret Russell's view, however, if we construed it as implying the presence of a specific feeling in Jones on all those occasions when "Jones believes Smith is hot" is true. Russell very clearly specifies that there is no definite, single answer to the question what is happening in one when one believes that *B* is hot.[4] Various things, of course, may be occurring. What is interesting is Russell's conclusion : "All that can be definitely said is that certain possible occurrences would surprise me, while certain others would give me a feeling of confirmation."[5] The various mental and bodily states which may characterize Jones when he believes that Smith is hot have only something causal in common; namely, each one of such states will cause in Jones a "surprise feeling" if certain occurrences show (actually or apparently) his belief to be false, or, on the other hand, a "yes" or "confirmation" feeling if certain occurrences show (actually or apparently) his belief to be true.

Accordingly, on this account, whenever "Jones believes *p*" is true, it is not the case that there is any state occurring in Jones the description of which must contain a subordinate complex, and "all that can be definitely said" is that certain occurrences would cause in Jones either a "surprise" or a "yes" feeling. This treatment of the matter clearly resembles similar contentions found in the writings of early pragmatists like James.[6] The suggestion would seem to be

[3] *Op. cit.*, p. 272. [4] *Op. cit.*, p. 206. [5] *Ibid.*

[6] For example, see "The Relation between Knower and Known" and "The Tigers in India," included in *The Meaning of Truth* (New York, 1909).

that "A believes *p*" entails "If certain events occur, Jones will be surprised." If this analysis is correct, then belief statements present no special difficulty for the thesis of atomicity.

By way of testing Russell's analysis, we may consider the proposal that (*S*) "Jones believes there are tigers in India" entails (*P*) "If Jones went to India and discovered no tigers, he would be surprised." It can be shown, however, that the *mere* fact that Jones is surprised when he goes to India and discovers no tigers is neither a necessary nor a sufficient condition for his having believed that there are tigers in India. Failure to notice this is very likely the result of overlooking a distinction between two ways in which experiencing surprise can occur. There is the type of occasion when surprise occurs as a direct consequence of a prior belief being found false (or believed to be found false), but there is also the sort of occasion when surprise occurs apart from any specific prior belief being actively entertained.[7] An example of the latter type would be a sensation of startlement induced by suitable drugs. When surprise occurs in this fashion, it is on a level with headaches and other sensations which have no "reference" to something other than themselves.

The mistaken view that all experiencings of surprise testify to the presence of some prior belief is possibly responsible for suggesting that (*S*) entails (*P*). If a total stranger suddenly strikes me, it is only misleading to say, in this context, that my feeling of surprise occurs because I believed that I would not be struck. The error here may have its source in still another mistake—of supposing that the statement "I believed I would not be struck" is the denial of "I believed I would be struck" and then concluding, since the latter statement in our hypothetical situation is false, that the former statement must be true. But, in our example, the denial of "I believed that I would be struck" is rather "I had no belief at all about being or not being struck"—and it is this statement which correctly describes my state of mind prior to receiving the unanticipated blow.

In the former essay James uses the expression "jar" where Russell uses "surprise," but apparently for the same purpose.

[7] For our purposes, it is irrelevant whether "beliefs" be taken as occurrences or dispositions, although Russell apparently regards them as involving a combination of both. If belief is analyzed solely as a disposition, however, a distinction between types of belief must be admitted. Note: No matter what the conditions are, if *x* surprises me, there is a sense in which I was "disposed" to be surprised by *x*. But this is quite different from the sense in which, because today I believe it will rain tomorrow, I am "disposed" to be surprised tomorrow if the sun shines.

The point established by the above remarks is this : The statement (*P*) "If Jones went to India and discovered no tigers, he would be surprised" is not entailed by (*S*) "Jones believes there are tigers in India," since (*P*), as it stands, leaves wholly unspecified the manner in which Jones's surprise is to occur. As can readily be seen, (*P*) is compatible with "Jones goes to India, discovers no tigers, and is surprised when a native slaps him." Any number of such statements, all of which are irrelevant to the truth of (*S*), are equally compatible with (*P*). If the claim that (*S*) entails (*P*) is to be at all plausible, (*P*) must be explicitly qualified in two respects: (a) it must describe the occasion of Jones's surprise as being a direct consequence of a prior belief found (actually or apparently) false, and (b) the prior belief described must be the one described in (*S*). The simplest way of reformulating (*P*) in accordance with these requirements is: (*P'*) "If Jones went to India and discovered no tigers, he would be surprised that there are (actually or apparently) no tigers in India." Russell's proposal that a belief statement entails some surprise statement, even when generously interpreted, must concede the necessity of formulating the surprise statement in accordance with the requirements met by (*P'*).

An important consequence emerges now for the thesis of atomicity. If we accept Russell's analysis of belief statements, but with the qualification that what is entailed by (*S*) is not (*P*) but (*P'*), we see immediately that (*P'*) reintroduces a subordinate complex of the same sort found in (*S*). The term "surprised" governs a subordinate statement in the same way that "believes" functions in (*S*) "Jones believes there are tigers in India." The significance of the distinction made earlier between the ways in which experiencing surprise can occur is now even more evident. When surprise occurs in the manner indicated by (*P'*), it is as excellent an example of what Russell calls "propositional attitudes" as are belief, doubt, hope, and so on. Since any statement describing a propositional attitude presents the same difficulty for the atomicity tenet, no progress is made by elucidating one such statement, a belief statement, in terms of another, a surprise statement. Whatever difficulties are believed to attend an analysis of the former would thus appear to apply equally to the latter.

To appreciate the importance which Russell attaches both to the atomicity principle and to the development of a semiotic fulfilling the requirements of a philosophical doctrine like Physicalism—which, as he himself observes, are mutually dependent—it may be worth expanding briefly certain remarks made earlier. What is initially puzzling to Russell about statements like "A believes B is hot" is

not simply the presence of "B is hot" as a subordinate statement, nor merely that the belief statement cannot be treated as a truth-functional compound, but, perhaps even more importantly, is the fact that "B is hot" seems to describe something to which A's belief "refers." But what can the words "B is hot" describe, if, for example, there is no Mr. B?[8] Further, how are we to explicate the expression "refers" here? To speak of our attitudes, regarded as occurrent states, as "referential" is misleading for exactly the same reasons that led James to be impatient with the description of our thought of tigers as a "mental pointing."[9]

These puzzles, Russell suggests, evaporate if we take the view instead that, whenever "A believes B is hot" is true, there are certain states of A which psychologists and physiologists, working together, could identify and thereby know that A is in a state correctly described as "believing" that B is hot. Theoretically, each such state could be identified as a "believing p" by discovering whether it leads to a surprise experience upon A's finding (actually or apparently) p false.[10] So long as the physiologist can ascertain A's belief by keeping his scientific eye fixed only on A, there is no mystery. But, Russell seems to think, if a belief state of A is said to "refer" to B, like a kite string that thread of reference leads the physiologist's eye out of A's insides, out of his states, out of his observable behavior, and then suddenly vanishes somewhere outside A—especially if there is no Mr. B.

The proposed analysis of propositional attitudes in terms of surprise experiences, thus preserving the atomicity principle, is designed to eliminate incoherent pictures like the above. But, as we have argued, this could seem plausible only so long as it was supposed that all experiencings of surprise are on a par with simple startlements which provoke such exclamations as "Oh!" and "Ugh!" These experiences, after all, could be brought into the purview of the scientific eye, since here no "string of reference" leads the gaze to a sudden vanishing point. This line of reasoning loses its promise, however, once we are reminded that surprise is often a propositional attitude exactly like belief.

There remains, of course, the problem of clarifying what is involved in describing propositional attitudes as "referential." Unfortunately, nothing in what we have said provides much help in this respect. What we may have learned, however, from the foregoing discussion

[8] Russell, *op. cit.*, p. 207.

[9] "The Tigers in India," in *The Meaning of Truth*, p. 44.

[10] Russell, *op. cit.*, pp. 208-209.

is that (a) it is unlikely that there are more "fundamental" modes of description of such attitudes which can be accommodated to the principle of atomicity, and that (b) it is improbable that either the atomicity thesis or a behavioral semiotic need to be preserved in order to clarify what is meant in saying, when A believes p, that A's belief "refers to" what p describes.

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SYNONYMITY AS REVEALED BY INTUITION

In his "Analytic Sentences," Benson Mates contends "that one is justified in saying that there are 'intuitive' notions of analyticity and synonymy."[1] This empirical hypothesis about the existence of certain phenomena or kinds of phenomena is tenable, so far as I can see. Mates has an intuitive notion of synonymity; I have had several in my life, and there is reason to believe that all of them have much in common. On the other hand, there is no reason to believe that the various intuited entities are identical or near identical.

If a notion is distinguished from a concept, a sentence of the kind "The person *P* has an intuitive notion of synonymity" may conveniently be made to imply nothing about *P*'s definiteness of intention, whereas the use of the term "concept" instead of "notion" in that skeleton sentence may be made to imply a certain minimal definiteness of intention.

Calling something "an intuitive notion of *x*," where "*x*" is a word or series of words borrowed from the natural languages, suggests that a certain designation is appropriate as a sign vehicle responsible for designating *x* in particular communicational events. That is, one suggests, if not implicitly asserts, something about the nature of the intuited entity and something about the use of the designation. Suppose, for example, *x* is the designation "synonymity." The intuited entity would then not be considered the same as, for example, the intuited notion of heteronymity. This much may be inferred on the basis of plausible premises. But since the choice of one designation does not imply a rejection of all others, the entity which one author in one situation tries to refer to by the word "synonymity," he or others may in some other situations refer to by means of "sameness of meaning" or even "simultaneity"—for all we know. In the following, however, we shall leave out of consideration any use that seems awkward to us.

[1] *Philosophical Review*, LX (1951), 532. We shall in this article pay close attention to Mates' valuable articles concerning concepts of synonymity. He has admirably stressed the central position of such concepts in a variety of fields of discussion; see especially p. 208 of his "Synonymity," *University of California Publications in Philosophy*, XXV (Berkeley, 1950); reprinted in *Semantics*, ed. by L. Linsky (Urbana, Ill., 1952).

1. *Characterization of an intuited notion of synonymity*

Which, now, are the main properties of the notion of synonymity as an intuited entity? It is difficult to convey one's own intuitions to others, but when I try to do so, it seems that intuitions I have differ in some respect from those of many linguists and philosophers, among whom I find Mates. If both of us should assert that our own intuitions are more adequate or more nearly similar to the intuitions of respectable authorities, there would be disagreement between us. But by what kind of discussions or research can a disagreement about the nature of an intuited entity be settled? Fortunately, collective research does not seem to presuppose that all intuitions are shared by all researchers, or that they should even know of the differences, or that the intuited entities should be definite in outline and content. Thus, there may in the years to come be much fruitful research concerning synonymity by researchers with partially different *intuitive* notions of synonymity.

Concerning my own intuitions not much need be said: After a rather imperfect mental introspection and *Wesensschau*, I venture to assert the following about synonymity as intuited by me:

(1) Synonymity is a relation between two or more things.

(2) The relation is one of identity, but only identity in one respect among others. Nothing is intuited about the degree of strictness of the identity required. Considerable laxness is permitted.

(3) The identical trait or aspect is that of meaning. In the occurrences most relevant to our theme, it is that of a kind of meaning or aspect of meaning roughly suggested by the predicate "cognitive." The term "meaning" is used in this characterization partly because its indefiniteness suggests the indefinite character of the intuition.

(4) The relata are words and may be also some other things. The term "word" is here chosen, not "designation" or some other more technical term, because "word" has an air of large indefiniteness.

(5) One may say that two words have not always been synonymous and also that for some people this or that pair of words are synonyms whereas for others they are not. It is not a necessary condition for the synonymity of two expressions that no copies or instances whatsoever are heteronymous. That is, the expressions may be said to be synonymous without implying an assertion covering all occurrences.

(6) The intuited relation is not one between single *instances* or between classes of single instances of designations. Words are

conceived to have a thing character that does not appertain to singular events of communication, and words, rather than instances of words, are synonymous.

Synonymity as characterized above may not be identical, or even roughly similar, to synonymity as conceived by some other people or by one and the same person through a long stretch of time. When I read linguistic or philosophical literature, the intuited notion of synonymity is normally overgrown with features suggested by the special definitions or discussions of each author.

2. *Intuited notions and the researcher*

Suppose we are interested in answering some questions involving synonymity and that our interest is not exclusively dependent on any one definite concept being used. The questions themselves have a certain amount of indefiniteness. What will be the requirement of definiteness in order to start research?

It is our contention that sound methodology does not require strict conformity of research terminology to prior intuitions. One may even say that strict conformity is not possible because of the indefiniteness of the intuitions. On the other hand, there must be a similarity or close analogy of some kind between the questions posed by a person prior to research and those posed during his research. If not, one may of course say that the questions we try to answer by means of research are not *at all* the same as those posed before entering into research.

Deliberate changes in questions are made during the passage from informal reflections before research to systematic expositions during research. A discontinuity is created which is often slurred over by using the same expressions and phrases during research as before, without making changes in meaning explicit. The changes in questions are made because we try to connect them with already established knowledge or methods, or because of the low testability of prescientific categories, or because the relation of relevance of certain subordinate questions to major questions is thereby reassessed.

All these factors must be kept in mind when trying to develop research concerning cognitive synonymity. Some features of some intuited notions of synonymity will have to be ignored. In trying to construct fruitful concepts of synonymity, or concepts closely related to those of synonymity, some features of the intuited content have already been deliberately ignored. Thus the concepts in my *Inter-*

pretation and Preciseness[2] are such that so-called "occurrence synonymity" may be predicted about pairs of singular occurrences of two different designations, or even between occurrences of the same designation. This violates requirement (6) of my own intuitive notion. The violation is motivated both on methodological and on other grounds.

3. *Intuitions about universal interchangeability are not universal*

The intuitive notion of synonymity possessed by some researchers (W. V. Quine, Mates) seems to be more definite and sophisticated than the one I have. Theirs can be reached, it seems to me, by fairly *strong* specification of meaning in certain directions, taking as a starting point the skeleton sentence "*x* and *y* have cognitively the same meaning." One of the striking features of the entity intuited by Mates is that synonymity must be said to presuppose *universal* interchangeability *salva veritate*. As a criterion, or as a "condition of adequacy for definitions of 'synonymity,'" Mates proposes, at least for the sake of argument, a requirement he intends to express by the following sentence: "Two expressions are synonymous in a language *L* if and only if they may be interchanged in each sentence in *L* without altering the truth value of that sentence."[3]

If the term "universal" is interpreted as intended by Mates, it seems that one is led to one of two conclusions: either *there are no synonyms and have never been any* in any (natural) language or *we have no means of ascertaining the existence of any synonyms*.

The intuited entity Mates associates with the term "synonymity" seems to him to be of such a nature that two expressions, in order to be instances of synonymity, must have the property he designates by "universal interchangeability." He argues that "we ordinarily intend to use the word 'synonymity' in such a way as to satisfy this condition."[4] The corresponding entity which I intuit does *not* require any of those properties which I might designate by the term "universal interchangeability," when this expression is interpreted in the senses in which I believe Mates may have intended it to be interpreted. It is less definite, my intention being indefinite to a high degree. And the requirement also is less strict and definite. A vast number of the cases of the actual use of sentences such as "*x* means the same as *y*" are in satisfactory relation to my intuited notion of synonymity. If universal interchangeability in the strict sense prescribed by Mates were asserted (by implication) in this vast number of cases, the sentences would

[2] Oslo, 1954. [3] *Op. cit.*, p. 209. [4] *Ibid.*

all be false, I suspect. It is my view that in most of these cases people are *right* in saying "*x* means the same as *y*" in the senses intended. They do not mean to claim universality of intention in relation to the ordinary use of the term. (By "we" Mates may intend a select minority; in that case I may not disagree with him.)

Many others, linguists as well as philosophers, also seem to take it for granted that concepts of synonymity, in order to have an adequate relation to usage, must require universal interchangeability *salva veritate*. I shall argue that the requirement is more in agreement with certain preconceived conceptions of synonymity than with usage itself.

4. *Lax and broad notions and usages of "synonymity"*

Interesting, in part amusing, evidence of the broad and lax use of "synonym" is available in collections of synonyms and antonyms such as that given by Roget and in answers to direct, unsophisticated synonymity questions, for instance as given by V. A. Revie.

That students require very little in order to assert synonymity is exemplified by the answers to Revie's invitation to list synonyms of a given word. Of 246 undergraduate students he invited to list synonyms of "automobile,"[5] 243 included in their list "car," 241 "auto," 216 "coupé," 215 "sedan," 209 "roadster," 209 "limousine," 194 "motorcar," 191 "touring car," 176 "taxicab," and 170 "vehicle." If we interchange "automobile" with these terms, or replace them with "automobile," we shall have great fun but also no small confusion among car dealers and people reading advertisements in the buying and selling columns. A notion that would fit the lists of examples offered relatively well but still rather inadequately is "meaning the same at least for one person in at least one situation."[6] There is, however, a not inconsiderable percentage of answers in the form of designations of subclasses, subkinds, or denotata in relation to that notion. Taxicab is an example. The answers of this sort can be classified into two main groups, one containing answers intended to be answers to the question interpreted approximately as does the analyst, the other containing answers that seem to presuppose an interpretation of "mean the same as" in the direction of "includes as a subgroup and subkind."[7] The same grouping can be found in exemplifications

[5] Reported on p. 18 of his M.A. thesis. A copy is in the University of California Library.

[6] The notion is a point of departure for concepts of "synonymic alternative" in the terminology of *Interpretation and Preciseness* (p. 51).

[7] "Specifications" in the terminology of *Interpretation and Preciseness* (p. 62).

of synonyms in traditional synonymics, for instance in Roget's *Thesaurus:* "*automobile*, motorcar, limousine, sedan, touring car, roadster, coupé, motor, machine, car, auto, autocar, runabout; truck, tractor; taxicab, taxi, motorbus; flivver, jitney."

A clear intention on the part of linguists concerned with traditional synonymics or on the part of students offering examples of synonyms to satisfy requirements of universal or near-universal interchangeability would result in lists of examples having other properties than those mentioned in the foregoing. Examples offered of designations or sentences having the same meaning seem generally not to be intended to exemplify designations or sentences satisfying requirements of universal interchangeability, not even when the author, answering questions about what he intends by "synonym," suggests such a requirement. And hardly any examples actually satisfy such strict versions of the requirement as that suggested by Mates. (That they do not, he himself has argued clearly and convincingly.) Because of the wide area of indefiniteness of intention and the heterogeneous character of lists of examples, there is a wide diversity of concepts of which all might be said to have that minimum of agreement with previous usage that it is methodologically wise to require. Pronounced indefiniteness may make terms useful in surveys and rough characterizations. Thus, I use the term "synonymity questionnaire" for a large group of questionnaires which in a rough, preliminary way may be said to "concern synonymity," but which certainly do not all have to do with universal interchangeability.

5. *Why do we require universality?*

Why do some of us sometimes believe that, as ordinarily used, "sameness" of cognitive meaning somehow implies universal interchangeability? One of the causal factors which I suspect operates in this case is a common one and an important source of confusion.

In ordinary conversation or in linguistic research we may say that this has the same meaning as that. No qualifications are added, in spite of the reference to a definite utterance or a definite place in a manuscript at which we are pointing. If we are brought to reflect upon our assertion of sameness of meaning, *the limited definiteness of intention associated with the original occurrence of "mean the same as"* tends to be overlooked. The absence of qualifications, of phrases limiting the claim, tends to be attributed to an intention to assert something about *all possible occurrences* of the expressions said to mean the same,

or about the synonymous expressions themselves regarded as entities independent of occurrences in use and thus as having a thing character or an intrinsic correct meaning. This assumption or feeling about the intended meaning in respect to universality may, however, be just as misleading as the supposition that we intended to say something about a *definite pair* of occurrences of the expressions or about any other definite subclass of all possible occurrences. Very likely the definiteness of intention was not sufficient to make any such discriminations, and careful experiments might confirm an unsuspected area of indefiniteness in the original utterance.

The feeling that the intention of universal interchangeability is somehow in better agreement with ordinary, linguistic, or philosophical uses of "synonymity" than that of restricted exchangeability may be in part caused by overestimating the definiteness of intention associated with *unqualified* phrases in general. Such overestimation tends to make us take *unqualifiedness*, absence of restricting or limiting phrases in expressions, as proof of generality or absoluteness of claim.[8]

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[8] An instructive example of absoluteness is furnished by occurrences of "certain." In ordinary conversation things are said to be "certain" which some philosophers would consider highly uncertain. Experiments suggest, however, that "certain" in ordinary conversation is used with a too low definiteness of intention to enable us to compare the assertions intended with those using concepts of certainty introduced by philosophers. Cf. the author's "*Truth*" *as Conceived by Those Who Are not Professional Philosophers* (Oslo, 1937).

ONCE MORE: COLORS AND THE SYNTHETIC A PRIORI

As against my earlier contention that such statements as "Nothing is at the same time both blue and red all over" cannot be analytic—though being unquestionably a priori—because of the unanalyzability of color predicates,[1] Hilary Putnam has recently attempted an elegant proof of their analyticity.[2] He succeeds in the proof of the analyticity of the completely general proposition that nothing can have two colors at the same time by proceeding as follows. He selects "indistinguishable with respect to color" as the sole primitive of a constructional system dealing with colors. While it is an empirical fact that this relation is not transitive, we can define "exactly identical in color" on the basis of this primitive in such a way that the relation designated by it is demonstrably not only symmetrical and reflexive but also transitive:

$$Ex, y = (z)\ (Iz, x \equiv Iz, y) \qquad D_1.$$

Next we define the second level predicate "color" on the basis of "E" as follows: F is a color = there is something, y, such that a thing is F if and only if it is exactly identical in color with y. Formally:

$$C\ (F) = (\exists y)\ (x)\ (Fx \equiv\!\!\!\equiv Ex, y) \qquad D_2.$$

I borrow the symbol "$\equiv\!\!\!\equiv$" from R. Carnap's *Meaning and Necessity* to express logical equivalence. It seems to me impossible to give the intended definition in extensional terms (material equivalence) for this reason: Suppose that F were a quality other than a color, for example, a shape. It might happen that the predicates "blue" and "round," for example, had the same extension. Now, if a is the standard patch with reference to which "blue" is defined, then in our hypothetical universe anything which has E to a is round and conversely. But then D_2 would justify the conclusion that roundness is a color if its definiens were extensional.

Next let us formalize the theorem to be proved on the basis of

[1] "Logical Nonsense," *Philosophy and Phenomenological Research*, IX (1948), 269-283; "Are All Necessary Propositions Analytic?" *Philosophical Review*, LVIII (1949), 299-320; *Elements of Analytic Philosophy* (New York, 1949), ch. 16 b.

[2] "Reds, Greens, and Logical Analysis," *Philosophical Review*, LXV (1956), 206-217.

these (intuitively adequate) definitions; namely, that nothing has two colors at once:[3]

$$(F)\ (G)\ [C\ (F)\ .\ C\ (G)\ .\ F \neq G \supset (x)\ (Fx \supset -\ Gx)] \qquad T.$$

Putnam is right in saying that T is formally provable on the basis of D_1 and D_2 with the help of functional logic, without presupposing any extralogical postulates (the apparatus of functional logic needs to be supplemented, however, by a modal operator, since the proof presupposes that $F = G$ if and only if $(x)\ [Fx \equiv Gx]$). And I admit that I was not aware of this possibility when I argued against the analyticity of the special cases of T. I shall show, however, that the claim that the special cases of T, like "nothing is both blue and red," are analytic involves us in a paradox which no empiricist can afford to accept.

Let us not be overhasty and say: since it has been formally proved that nothing can have two colors at the same time, no special proof is required for the proposition that nothing can be both blue and red at the same time; for surely you will not question the analyticity of "Blue and Red are colors." In the first place, what is at issue is analyticity in the strict sense of "formal provability with or without help of adequate definitions of extralogical terms", not analyticity in the broad sense of "true *ex vi terminorum*", which I believe means nothing else than old-fashioned, self-evident necessity. I never denied that statements of color incompatibility are true *ex vi terminorum*, in the sense that it is impossible to question them if one understands them; nor would I put "Red is a color" into a different category. But secondly, observe that the substitution instance of T with "Red" substituted for "F" and "Blue" substituted for "G" reads:

$$C\ (\text{Red})\ .\ C\ (\text{Blue})\ .\ \text{Red} \neq \text{Blue} \supset (x)\ [\text{Red}\ (x) \supset -\ \text{Blue}\ (x)] \qquad t.$$

And the analyticity of t— which follows from the analyticity of T—is a sufficient ground for asserting the analyticity of the consequent of t only if the antecedent of t is likewise analytic. That the three statements forming the antecedent of t are all analytic is readily shown if we construct explicit definitions of "Red" and "Blue" which conform to Putnam's definition of "color"—*but* these definitions will

[3] In order to keep symbolic complexity at a minimum, I omit the time variable in the formalization. The range of the individual variable may be conceived as consisting of spatially extended entities, whether physical things or sense data is immaterial. If x is a physical thing, then "red (x)" is to be read as: the whole surface of x is red.

make use of *proper names*, which is the beginning of the paradox I am about to develop. Let

$$\text{Red}\,(x) = df\ \ E\,(x, a)\ \ (D_3), \text{ and Blue}\,(x) = df\ \ E\,(x, b)\ \ (D_4),$$

where a and b are different particulars. And let identity of properties, as usual, be defined in terms of necessary equivalence. Then we may begin by proving the self-contradictoriness of "Red = Blue," and thereby the analyticity of "Red ≠ Blue," as follows:

$$(\text{Red} = \text{Blue}) \equiv (x)\,(\text{Red}(x) \equiv \text{Blue}(x)) \equiv (x)\,(E(x,a) \equiv E(x,b)).$$

But the latter necessary equivalence entails the identity of a and b; for it cannot be self-contradictory to suppose that something has exactly the same color as a without having exactly the same color as b unless a and b are identical. Since "$a = b$" is self-contradictory *ex hypothesi*, "Red = Blue" is self-contradictory. Next we tackle "C (Red)"—but omit the analogous proof for "C (Blue)". On the basis of D_3, we can assert: $(x)(\text{Red}(x) \equiv E(x, a))$. Hence: $(\exists y)\,(x)\,(\text{Red}\,(x) \equiv Exy)$, which by D_2 means that Red is a color.

This is all very exhilarating for the constructionist, until he pauses to draw from D_3 and D_4 the startling consequence that the atomic statements "a is red" and "b is blue" are analytic and that his formal definitions therefore warrant an "ontological leap" to the existence, not of God, but of red and blue things. But how could "a is red" be analytic? The first alternative is that "a" is an ostensive proper name, a symbolic equivalent of "this" or "that," and therefore meaningless outside of a "token-producing" context. The statement "a is red" then says that that which a certain speaker is at a given time pointing at is red; but I discover no self-contradiction in the negation of such a statement. The second alternative is that "a" is short for a co-ordinate description. But surely the atomic statements of a Carnapian co-ordinate language are supposed to be synthetic; it is a contingent fact that such and such a quality occupies a specified space-time point or region. Finally, "a" may be short for a characterizing description in a thing language, something like "the mail box in front of my house." Now, in order for "Red $((\imath x)\,Px)$" to be analytic, P must analytically entail Red.[4] But I do not see how a simple quality like Red (I mean an absolutely specific shade of Red) can be analytically entailed by P unless P is a conjunction containing Red.

[4] Those who accept the theory of descriptions would have to hold that even this is not a *sufficient* condition, but I would not rest a philosophical argument on so controversial a theory.

If so, the proof of analyticity will rest on a definition of "P" in terms of "Red," and since we have supposed "a" to be defined in terms of "P", D_3 then becomes circular.

Since the definitions in question, if noncircular, give rise to the consequence that there are contingent existential statements which are analytic, they must be rejected by an empiricist for whom "analytic" is incompatible with "contingent." Indeed, even intuitively [illegible] definitions are not *meaning analyses*. They are formalizations of ostensive definitions—even fictitious ostensive definitions, for one learns the meanings of color predicates before one knows the meaning of "the same in color," and then only by abstracting a common quality from *several* particulars—but ostensive definition is not meaning analysis. "Red" and "Blue" are what C. G. Hempel and P. Oppenheim, as well as Carnap, have called *purely qualitative* predicates, which means that no reference to a specific particular is necessary to explain their meanings—an idea flatly contradicted by the criticized definitions.

Surprisingly, then, my earlier argument that, because of the unanalyzability of "blue" and "red," the necessary statement "nothing is both blue and red" is not analytic has not been refuted by Putnam's clever demonstration of the analyticity of T—which demonstration, be it noted, makes use only of definitions that do not contain individual constants. The philosophical moral I wish to draw from this is that the analytic-synthetic distinction—not to be confused with the necessary-contingent distinction!—has no epistemological significance at all; that is, no essential difference of cognitive faculties is correlated with the difference between analytic and synthetic statements.[5] Anybody who knows that nothing can have two different colors at the same time thereby knows that nothing can be both blue and red at the same time, and the way he knows the more special proposition is surely not different from the way he knows the more general proposition; yet the latter can be plausibly argued to be analytic and the former to be synthetic.[6] In a way this "moral" is implicitly recognized by Carnap when he broadens what Putnam

[5] The reader will find it elaborated in my forthcoming book, *Semantics and Necessary Truth* (New Haven, Yale University Press, 1957).

[6] I should not be misunderstood to have argued that a synthetic proposition may be formally deducible from an analytic proposition. The statement t is formally deducible from T and is just as analytic as T. But the consequent of t is not formally deducible from T alone but only from T in conjunction with the—in my view likewise synthetic—antecedent of t.

calls the notion of "good old" analyticity, namely, formal provability by means of adequate *explicit* definitions alone, as follows: a statement is analytic in L if it is L-implied by the meaning postulates of L.[7] The meaning postulates (like the consequent of t) are trivially analytic by this definition—every meaning postulate L-implies itself—but they are not analytic in the "good old" sense; that is why they are needed as postulates. Carnap's broadened conception of analyticity incorporates the synthetic a priori within the analytic. But all that has happened is that synthetic a priori propositions in the narrower sense of "synthetic," namely, not formally provable with the help of adequate explicit definitions alone, have been *renamed* "meaning postulates."[8] Perhaps this terminological maneuver is justified by the reflection that after all "all bachelors are unmarried" and "nothing is both blue and red" have the important feature in common that nobody who understands what they mean could seriously doubt them. But it should be clear, then, that the modern controversy among analytic philosophers as to whether there are synthetic a priori propositions after all is far removed from the historic battlefield on which empiricists and rationalists met each other in deadly combat. If we reject D_3 as a meaning analysis, as we surely must, then "Red is a color" is not analytic in the "good old" sense. Yet, is it not unlikely that Kant, had he reflected on this kind of a priori proposition, would have postulated a new kind of "pure intuition" in order to explain how the predicate can be a priori associated with the subject? Again, consider the statement that I is a symmetrical relation, which presumably would occur as a "meaning postulate" in a system based on "I" as a primitive. Clearly, it cannot be analytic in the good old sense, for "I" is a primitive, and the statement is not true by virtue of its form (many statements of the form "for any x and y,

[7] Carnap, "Meaning Postulates," *Philosophical Studies* (1952).

[8] It should not be overlooked that according to the old, narrow conception of analyticity, which left room, so to speak, for the synthetic a priori, a statement is analytic only if a contradiction is *formally* deducible from its negation, i.e., without using extralogical postulates. For this reason the following proof of analyticity, presented to me once by a famous empiricist, is invalid: x is red $\equiv$ the color of x resembles Red more than any other color; x is green $\equiv$ the color of x resembles Green more than any other color; hence "x is green and red" entails "the color of x resembles Red more than Green, and Green more than Red," which is a contradiction. But the latter statement is not formally contradictory; it only contradicts the extralogical postulate that resembling (in a specified respect) y more than z is an asymmetrical relation with respect to y and z.

if *xRy*, then *yRx*" are false). But what capital could a rationalist make of such synthetic a priori knowledge? For notice that insofar as "if *xIy*, then *yIx*" differs from a mere substitution instance of "if *p*, then *p*," its necessity, though "synthetic," has a linguistic origin: it so happens that the sentences by which we communicate thoughts are *sequences* of signs. This sequential character is irrelevant to some propositions, such as the proposition that an individual *x* has *I* to an individual *y*—though it is relevant to propositions about relations that are not symmetrical. The postulate "if *xIy*, then *yIx*" merely expresses this irrelevance of the sequential character of sentences of the form "*xIy*." If we had a tonal language, with simple tones symbolizing individuals and differences of pitch symbolizing relations between the individuals, the postulate might be redundant: the proposition that *aIb* might be expressed by sounding, say, a major third containing the tones symbolizing *a* and *b*, and this nonsequential "sentence" would be identical with the sentence corresponding to "*bIa*." This example shows that a synthetic a priori proposition, in the only sense in which I ever maintained that there are such, may even be purely *verbal* and not "about the world" at all!

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RED AND GREEN ALL OVER AGAIN: A REJOINDER TO ARTHUR PAP

PROFESSOR Arthur Pap's paper does not contain anything with which I disagree. It does compel me, however, to restate points which were unclearly or even inadequately stated in the paper to which he refers.

(i) I did not say in that paper that "Nothing is both red and green" is analytic in the *narrower* sense, i.e., true as a consequence of explicit definitions. What I said was that "Nothing is two different colors at once" (T) is analytic, even in the narrower sense, and that "Nothing is both red and green" is analytic in a wider sense (true as a consequence of the rules of the language), which I tried to express by showing that it follows from the analytic sentence (T) and certain meaning postulates whose status as linguistic stipulations is, I think, pretty clear in this particular case.

(ii) Pap calls into question the device of "Meaning Postulates." As a device for explicating the notion of analyticity in a particular language, I believe that meaning postulates are unexceptionable (provided that the analytic character of the particular postulates is intuitively clear; and provided they are *complete*, i.e., no analytic truth in the particular language has been "overlooked"). I agree, however, that they do not explain the notion of *analyticity in any language;* and it is this that is of philosophic interest. Explicating this notion is an important problem in analytic philosophy, unless one accepts the view (which I find prima facie unacceptable) that there is no difference to be explicated.

As a first stab, let me suggest *truth as a consequence of the rules of the language* (as explicatum for analyticity in the wider sense). There are (at least) three obvious objections: (1) the notion of a "rule of language" is itself in need of explicating; (2) one can in this way beg the philosophic questions (by taking the sentences traditionally alleged to be "synthetic a priori" as rules of language); and (3) there is no need for a concept of "analyticity in the wider sense": we already have the distinction between necessary and contingent truths as well as that between analytic (in the narrower sense) and nonanalytic, and the former distinction suffices for the purpose in question.

To take the last objection first: Pap classifies "If x is indistinguishable in color from y then y is indistinguishable in color from x" as "synthetic a priori," although he also says that it is purely *verbal* (and gives a neat argument to show why). But to do this is to admit that the division of necessary truths into those whose necessity is linguistic or verbal and those (if any) whose necessity is not is not explicated by the narrower concept of analyticity. Thus a wider concept is needed. And it seems more natural to say that the statement just mentioned is analytic (though not in the narrower sense) than to say that it is "synthetic a priori" (though verbal). Likewise, it seems to me more natural to say that the difference, among analytic truths, between those whose analyticity is of the narrower kind ("All bachelors are unmarried") and those whose analyticity is not ("Red is a color") is no philosophically interesting difference at all, than to say, as Pap does, that the analytic-synthetic distinction ("not to be confused with the necessary-contingent distinction") is devoid of epistemological significance.

But this last difference is purely terminological! The important point, however one expresses it, is that there are no necessary truths whose "necessity" differs in a fundamental and mysterious way from that of the analytic truths. And on this point Pap and I are in complete agreement. Since T and its special cases have sometimes been cited as truths of the "mysterious" kind, I hope to have contributed to the argument for this point by showing that T is analytic, even in the narrower sense.

With respect to objection (2): I agree that one could fall into this trap and side-step or evade the traditional problem entirely. For example, I could have taken "Nothing is both red and green" as a meaning postulate. But I think it important that I *did not* do this. What I am prepared to take are things whose analytic character (in whichever sense) the traditional philosopher admits. I know of *no* philosopher who has thought that "Red is a color" is an apodictic truth in the sense in which, say, the phenomenologists have thought "Nothing is both red and green" is an apodictic truth.

I am prepared to admit the difficulty in objection (1); but only to the extent that the general notion of a *rule* is in need of clarification. For example, there are no difficulties that affect the notion of a rule of language and that do not equally affect the notion of a rule of a game. Is the notion of a rule of chess or mah-jongg clearer because the rules of chess and mah-jongg are written down? But surely some languages have written rules, and some games have unwritten ones.

And surely the rules that are written down are a codification of pre-existing rules in the case of a game as well as a language; they do not define what it is to be a rule of a game. In the case of some languages, as in the case of some games, I am relatively sure of the rules; and in some cases of both kinds I am unsure. And in both cases I would have difficulty in providing a formal definition, of a kind that would satisfy Quine, of the general concept *rule*.

(iii) Pap's paper also raises some technical points which I find fascinating indeed, and to which I do not have space to do justice here. I shall make only one or two remarks:

(a) My paper visualizes an *extensional* language as the basis for reconstruction. In any extensional language (e.g., *Principia Mathematica*) it is quite true that "Red = Square" (and even "Square is a color") would be accepted as true in the case that Red and Square are coextensive. (One can also say that I was defining the notion of a color *class* and not that of a color *property*.) But this is not necessarily serious: one can express what we ordinarily express by saying, "The *property* Square is not a color property" by saying in the metalanguage: "Square is a color" is not *L*-true.[1]

(b) In my paper, I did not define Red and Green in terms of particular objects (although it is true that I said one *could* do this; and I am quite convinced by Pap's objection). But the course I preferred was to take Red and Green as primitives and to take "Red and Green are different colors" as a meaning postulate.

The argument is this: it would not be plausible to take "Nothing is both red and green" as a direct linguistic stipulation, for reasons that have been excellently presented in Pap's book *Elements of Analytic Philosophy* (New York, 1949, p. 422). But it seems plausible to take "Red and Green are different colors" in this way ("Red" and "Green" are to be used to name different colors). And this does not evade the traditional problem, for the philosopher can still reply: "Even if I agree to use "Red" and "Green" as the names of different colors,

[1] Note that it is sufficient to establish the truth of T and its special cases under the extensional interpretation: for if nothing belongs to both the class Red and the class Green, then a fortiori nothing has both the *property* Red and the *property* Green; cf. R. Carnap's *Meaning and Necessity*.

If one does want a definition for an intensional language, then I am not satisfied that Pap's D_2 is correct. However, the following certainly satisfies his intention: F is a color property = if F has a non-empty extension, then necessarily the extension of F is a color class. In symbols:

$$C(F) = (\exists x)\, Fx \supset (\exists y)\, (x)\, (Fx \equiv Exy)$$

how do you know nothing can be two different colors at once?" And to this I gave an answer.

Subsequently, I have discovered an argument which employs only the weaker postulates: "Red is a color" and "Green is a color." This argument does not, indeed, show that "Nothing is both red and green" is analytic; but it does show that it is *at least* entailed by an observation statement, which is enough to destroy the "mystery." Namely, from the fact that *one* red thing is not green, and the fact that Red and Green are colors, it follows analytically that Red and Green are different colors. And from this and T, which has been shown to be analytic in the narrower sense, it follows that nothing is both red and green.

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BOOK REVIEWS

THE MYTH OF SISYPHUS. By ALBERT CAMUS. New York, Alfred A. Knopf, 1955. Pp. 212. $3.50.

This book is a collection of essays of which the longest and most important is the title piece, "The Myth of Sisyphus," originally published in France in 1942. Its appearance now in English translation is somewhat mystifying, since its existentialist rhetoric seems dated and its merits as a piece of philosophical or moral reasoning are slight. It does have a certain interest as a document of its time and as a commentary on some of the themes which Camus has developed with much greater success in his plays and novels. It is unfortunate, however, that it should appear in a translation which contrives to be at once wooden and inept. One might have thought it crucial that a philosophical exploration of the "Absurd" should not be made to sound absurd in any more familiar sense of the word; but such is too often the effect of the peculiar idiom, halfway between French and English, into which Camus' fine prose has been rendered. It may indeed be true that what Camus calls "une sensibilité absurde" reduces to no more than "an absurd sensitivity," as it is translated here; but surely it would have been wiser to leave the task of establishing this damaging (and, at the level of translation, quite incorrect) equivalence to Camus' philosophical critics.

The question Camus sets out to answer is what kind of moral life is possible once the "Absurd" has been discovered and accepted. Is Kirillov right and is suicide the only logical course or is some more affirmative attitude possible? It is clear that what Camus is offering is not just a statement of his own personal resolution of this problem, but a general answer, based on argument and claiming some kind of general validity. It is the more to be regretted, therefore, that he is not altogether clear about what it is one finds out in discovering the "Absurd." Sometimes it seems to be no more than the fact that the world is not, in some vague sense, "mine." It disappoints my hopes and seems indifferent to my personal happiness. But this "discovery" is one that is normally made in adolescence, and it is hard so see why Camus treats the notion that it somehow necessitates suicide as seriously as he does in trying to refute it. In other, more rewarding passages, it is the inability of human reason

to "unify" the world and to deduce some uniquely valid purpose to life that produces "a divorce between a man's life and the world." What this comes to, apparently, is the familiar fact that no principle of conduct can be exhibited as uniquely appropriate to the nature of things. To some extent, Camus tells us, the life of the person who lives with this fact resembles that of man after the Fall in the Christian system, but the "absurd man" is distinguished by his sense of his own innocence and by his refusal to escape from his condition by the desperate and paradoxical leap of faith. Instead, he holds on to both of the two poles which define this condition—the moral opacity of the world and his own craving for unity—and his life is the permanent tension of their confrontation. The suicide, in Camus' view, capitulates even more abjectly than the religionist, since he simply suppresses one of the terms of the antithesis, i.e., himself. The "absurd man," on the other hand, lives "without appeal"; he acts in the face of the world's indifference; and the very gratuitousness of his action becomes its profoundest justification.

Camus' account of the "Absurd" is seriously vitiated by his failure to show what a nonabsurd world would be like and what the nature of moral action in such a world would be. If the demand for a nonabsurd world is so imperative and so pervasive that suicide seems the only recourse when it is disappointed, one would like to know how this total dependence of the moral life on what turns out to be an untenable assumption ever came about; and by what criteria one can tell that this world is in fact an absurd one. Is it, for example, just an (absurd?) accident that this world is absurd rather than nonabsurd? Or is a nonabsurd world a logical impossibility? All of these questions seem crucial to Camus' thesis, and answering them would require sustained and close analysis; but what we are offered in lieu of this seems hardly more than a declaration of personal attitude. The latter may command our respect, but it cannot take the place of reasoned argument. To take an example, one would like to have seen the assumed dependence of traditional moral ideals on the postulate of the metaphysical nonabsurdity of the world convincingly shown. But this would require a kind of moral phenomenology that is notably missing from this book, which is in fact a far better index of the state of mind of certain French intellectuals in a period of crisis than it is of the moral presuppositions of common sense. Camus scarcely bothers to conceal a profound lack of interest in those senses, scientific and philosophical, in which the world *can* be said to be "rational," and he dismisses them after the briefest

of hearings. When at the same time his nostalgia for the one (impossible) kind of rationality is so disproportionately to the fore, one wonders whether the inadequacy of the other kinds amounts to more than their failure to satisfy an inordinate demand made upon the world, which, so far from being universal, has very definite and local historical origins. At any rate, if existentialism is to be more than a parochial, post-Romantic hangover, its moral phenomenology will have to be purged of the irrelevancies which the contemporary European *Zeitgeist* so often foists upon it.

But admitting the discovery of the "Absurd" to be of universal significance, in what sense may moral directives be said to follow from it? Or, more unkindly, are some ways of living more "absurd" than others? Apparently so. Camus singles out the Don Juan, the actor, and the conqueror as examples of lives that are imbued with a sense of the "Absurd." It is significant that while he concedes that a civil servant's life could fit the bill equally well ("Civil servants of the world, you, too, can be absurd!"), he does not indicate how such a civil servant would be distinguished from his colleagues. In the cases selected for detailed attention, however, the distinguishing traits are patent. In all of them, the pointlessness of human effort has, according to Camus, come to be espoused as the one value that survives the wreck of all the rest. What is doubtful is whether this postabsurd attitude has any special logical affinity with the philosophical doctrine of the "Absurd" from which Camus derives it.

It seems to me that Camus is badly mistaken in the view he takes of the implications for the first-order moral life of philosophical theses about the "Absurd." It is, I think, true that the ultimate choice-character of moral principles that is brought out at the level of meta-ethical analysis "leaks down" into the actual moral judgments we make and modifies the style of the moral life. But the change effected is a subtle one and it is dangerously easy to confuse it with something quite different. This is what happens when the philosophical uses of words like "arbitrary" and "absurd" to signify, roughly, "not logically demonstrable," are confused with their more familiar senses in which they designate certain specific types of conduct. Once this error is made, it is easy to represent philosophical theses about the "absurdity of the moral life," i.e., the underivability of its principles from factual premises, as having special affinities with forms of conduct that are absurd only in the sense of being paradoxical, exaggerated, or eccentric. Camus' examples of the lives in which the consequences of the discovery of the Absurd are properly drawn are without excep-

tion cases in which the ordinary motives of conduct have been replaced or overlaid by a penchant for action as such and by an ethos that is very like the hectic latter-day Nietzscheanism which has been, for many years, now, the moral staple of St. Germain des Près. One is tempted to conclude that the confusions which made it possible for the latter to claim a spiritual affiliation with an austere phenomenological doctrine are identical with those which lead Camus to see in the life of the mime and the lover a paradigm of the moral life. It would seem that whenever existentialists begin to evangelize in the name of the "Absurd." they unwittingly lapse back into the very error they denounce—the appeal to a metaphysical principle as a justification of the way of life one has chosen. They forget that if the world does not have a "meaning" in the required sense of generating absolute moral directives, then neither does this very fact about the world—that it does not provide absolute norms—have the power to do so. And this holds true whether the norms in question are the original ones we set out to defend or their opposites (as is the case in Satanism) or the peculiar inversion of the moral life that Camus proposes in this book.

The other essays are very different in character and are on the whole of minor interest. They are devoted mainly to North African themes, and one or two partially anticipate Camus' recent revulsion against demoniacal German metaphysics and his conversion to a "Mediterranean" ethic of sunlight, happiness, and a sense of human limitations. In the light of what he says here and in his more recent book, *The Rebel*, it may be conjectured that he would now qualify substantially some of the main doctrines of "The Myth of Sisyphus."

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CRITICISM AND CONSTRUCTION IN THE PHILOSOPHY OF AMERICAN NEW REALISM. By LARS BOMAN. Stockholm, Almquist and Wiksell, 1955. Pp. 195.

This is a disappointing book. Parts of its introduction and table of contents suggest a book which might well have been of interest: a new look at the cluster of problems and issues which concerned the new realists. In his introduction the author alludes to certain "refined instruments in the shape of distinctions" (p. 20), which are available to the contemporary critic, and suggests that, with the aid

of these instruments, he is going "to analyze and precisely to determine some theories which to me appeared central in the neo-realistic philosophy" (p. 21). Three of the book's five chapters are entitled "The Ego-centric Predicament," "The Theory of External Relations," and "Consciousness—a Relation."

In the first chapter, on the egocentric predicament and its relation to idealism, the author puts his worst foot forward. The point of departure is R. B. Perry's 1910 paper "The Ego-centric Predicament" (*Journal of Philosophy*, VII, 1), although considerable space is devoted also to G. E. Moore's "Refutation of Idealism." Here the refined instruments find a characteristic employment. Should the theory which Perry calls "ontological idealism" be understood as the claim that being a thing (in the most general sense of "thing") formally implies, or entails, or is materially equivalent to, or is identical with, being perceived (in the most general sense of "perceive")? A similar question is raised concerning various formalized representations of the predicament itself. It is concluded that Perry is right in claiming that the predicament lends no support to idealism, but the warrant for such a conclusion seemed to this reviewer far clearer in Perry's article than in the author's "criticism and construction" of it.

Perry had some interesting points to make, and a reading of his paper is worth while. Such a reading also helps to elucidate many points in Boman's considerably longer "elucidation." Perry notes that if one seeks to learn something of the alleged modification produced in a thing by its standing in that relation called "being perceived," one may try to eliminate or subtract this cognitive relation to the thing, and then " 'deal with' the residuum. [But] 'dealing with' is a variety of the very relationship I sought to banish" (*loc. cit.*, p. 8). Again this relationship "can not be eliminated from one's field of study, because 'I study,' 'I eliminate,' 'I think,' 'I observe,' 'I investigate' are all cases of [that relationship]" (*ibid.*, p. 7). One might have thought that a critic would see fit to look into the similarities between these concepts, hoping thereby to draw out and get clearer about Perry's argument. But not our critic. For him there are no problems requiring the critic's attention in the very general notions of "perceive" and of "thing." He also speaks happily of "the property of existing" (p. 38), where he asserts that a certain "general implication is equivalent to the assertion that it is true of all things that the property of being perceived is a necessary condition for the property of existing." The author's critical powers are devoted rather to such matters as noting that Perry sometimes uses a certain relational symbol when

in fact he means the converse relation. It is not urged that any confusion or illicit philosophical conclusion follows from this mistake, and indeed none does; but we are nevertheless solemnly introduced to the "R—$\breve{R}$" notation, in order to guard against Perry's inexact formulations (p. 25, n.).

The discussion of Moore serves two purposes. First, our attention is drawn to various similarities, most of them admittedly superficial, between Moore's treatment of idealism and Perry's. And second, Moore's formulation of idealism is located with respect to the mentioned formalistic alternatives.

In subsequent chapters the standard varies somewhat, but on the whole it remains pedestrian. The "criticism" is never searching and is often superficial. The "construction" takes two main forms. First there are the frequent formalizations of theories, which always seem to leave the philosophical questions untouched. Second there is the canvassing and winnowing of alleged possible interpretations of theories. Here the distinctions used to justify multiple interpretations seem usually to be simply imposed by Boman, rather than reflecting anything which the new realist in question might be inclined to accept. Nor is the selection of the preferred interpretations customarily supported by evidence that the author in question would in fact have preferred it. (That these last features should obtain is perhaps implicit in the notion of "construction".) In any event, Boman's distinctions are for the most part simply introduced by fiat, with little or no attempt to justify their employment with the subject matter in question. One puts down the book with the conviction that the author has tackled too much, and that his faith in the "refined instruments" has not been justified.

In the preface the author acknowledges assistance with the translation; he could well have sought more of it. The book is full of unidiomatic usage which arrests the eye and the thought processes as one reads. What he says is nearly always decipherable, but the combination of clumsy syntax and bizarre idiom gives one sometimes the feeling that he is reading in a foreign language of only moderate familiarity.

The book is indexed and contains a lengthy bibliography. It is paper bound and attractively covered.

ROGER BUCK

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KANT'S FIRST CRITIQUE. An Appraisal of the Permanent Significance of Kant's *Critique of Pure Reason.* By H. W. CASSIRER. New York, The Macmillan Company, 1955. Pp. 368. $5.25.

In this volume, the author of the commentary on the *Critique of Judgment* and son of the late Ernst Cassirer turns his attention to the first *Critique*. The occasion for this concern, we are told in the Preface, was a preoccupation with the problem of the nature and possibility of metaphysical thinking, which Kant treats in the Dialectic of Pure Reason. The study of this section of the *Critique* in turn established a need to evaluate the arguments of the prior sections on which it depends. A little further along (p. 23), we are told that the author's "principal purpose . . . is to draw attention to those features of Kant's theory of knowledge" which are "of permanent philosophical importance."

The expressed intentions of the author are commendable. It is indeed heartening nowadays to see in print a work explicitly respectful of the tradition with which it deals, modest in its claim to understand, and committed to dealing with positions in their own terms. One notes with pleasure the remark that "the errors committed by the great philosophers are, generally speaking, not only more interesting but more fruitful than the truths propounded by lesser men" (p. 19). And it is good, too, to see a personal document, albeit a rather self-conscious one, in which a mind aims to square *itself* with the objective fact of an historical tradition. How well these intentions are carried out is, however, another matter.

The deficiencies of the work are frequently obvious. The author is himself quite candid about many of them—perhaps too candid, as if he supposed that confession carried its own absolution. There is, for example, no pretense of completeness. Where Kant is maintaining more than it seems he needs, the lesser thesis is openly substituted; where Kant employs an irreducible psychological vocabulary (notably in the first edition Deduction), that section is not considered; where Kant's eighteenth-century conception of mathematics or physics is essential to his discussion, that discussion is deliberately ignored. It should be noted, incidentally, that there are no footnotes, almost no references to the commentaries, and only a few references to other of Kant's writings—features which might well be a positive virtue were they more in keeping with Cassirer's method of paraphrase followed by critical comment.

The general position which Cassirer attempts to find in Kant can be summarized briefly. It is taken as axiomatic that if we are to

know anything there can be no transformation of the given or of the object known: in no sense can it be allowed that the mind constructs nature. The world must come to us already ordered, with all its connections and relations. Our awareness of these connections and relations, however, depends on our capacity to employ certain formal concepts, and our ability to make true statements about the world depends on our having principles by which to distinguish the objective and subjective in awareness. Synthetic propositions a priori, entirely prescriptive in nature, guarantee the objectivity of descriptive statements of fact. "They specify the way in which various concepts are made to have reference to the sense-given" (p. 119). This somewhat watered-down version of the transcendental logic supposedly saves Kant from (subjective) idealism.

Two general themes appear and reappear throughout the work. One is the absoluteness of the distinction between logic and psychology. The other is an interpretation of the thing-in-itself in terms of the precritical notion of intellectual or nonsensuous intuition. This latter is designed to relieve Kant of inconsistency and to save him from "realism."

The insistence on the absoluteness of the distinction between logic and psychology is certainly sound. But it is not much facilitated by a view of logic so narrow that it cannot comprehend the logical function of the categories or give meaning to "transcendental logic" and by a view of psychology so broad that it includes the determination of an object in experience. One result is the loss of the whole logical core of the Kantian philosophy; the other result is that the demand that Kant be *forced* to talk in logical terms (p. 124) ends in surrendering the heart of the Kantian doctrine to the psychologists.

Concerning the interpretation of the concept of the thing-in-itself, Cassirer's point appears to be that "thing-in-itself," "noumenon," and "transcendental object = *x*" are names for a single concept, which is indispensable for cognition. This concept is simply that of "an object of non-sensuous intuition." One may fairly ask whether the recommended "object of a non-sensuous intuition" will serve as the correlative of "phenomenon," whether it will serve in the Aesthetic as the "cause of sensuous intuition" and in the Analytic as the mode of our thinking an object in principle or of our thinking an object as essentially only known about.

With this orientation, it is perhaps no surprise that the author, who rejects the a priori nature of space and time (p. 137), is reluctant to discuss the Aesthetic and that he passes it off as out of date (as

if there were no longer any problem of the objectivity of mathematics) and a mere precritical holdover (rather than as simply the most elementary starting point, the first and most obvious appearance of form in mere externality and duration). The discussion of the Dialectic of Pure Reason fares far better and suffers least from the desire to press salvation on Kant at the risk of his personal identity.

Beyond the obvious merits and defects already noted, the worth of the whole is most difficult to assess. With respect to practically every feature one might use as a basis of judgment, the book seems to have a double aspect.

In exposition there is an admirable clarity, as well as a logical tightness to the argument; yet there is a great deal too much repetition, and worse, there is a propensity to overstate points made, particularly when the point is one against Kant, so that the reader is continually having to revise his estimation of the point being argued. The overall effect of this sort of thing is the feeling that the author is wavering in his own view, that he really has not made up his mind where he stands. Significantly, this feature is most apparent in the earlier chapters, where the author is admittedly feeling his way.

The same difficulty appears with respect to the manner in which the author proposes to deal with the Kantian doctrine. "I have never dissociated myself from any thesis of Kant's without a good deal of reflection; and only in those cases in which despite every effort I could not see my way to agreeing with him have I thought myself justified in rejecting his view and putting another in its place" (p. 18) hardly comports with "In my treatment of Kant's various tenets I have allowed myself to be largely influenced by my agreement with his point of view, and even by personal reactions produced in me either by his own observations or by opinions concerning his doctrine which are prevalent among his foremost expositors" (pp. 11-12).

Again, there is an admirable sympathy for Kant and an evident desire to treat him in his own terms; yet there is a continual effort to make Kant speak the truth, and an interest in passing judgment on particular propositions, replacing them, where judged mistaken, with propositions Kant might not have accepted.

Whether the presupposed view of the nature of philosophical truth is profound and tenable, I leave to the reader. I am convinced, however, that it belies the author's claim to be a Kantian. And this is, I judge, the major defect of the work: that for all its piety

and wit it yet remains an external criticism. I do not doubt that the author is well versed in the basic propositions of the faith. But it seems plain throughout that he has not really got hold of the principles by which they were generated, does not really move them ahead, and hence does not really get beyond them. He politely and insistently begs to differ with the master and, when possible, set him right. His work is, after all is said, only another effort to assimilate Kant to a basically non-Kantian manner of thinking. As it is, this uneven volume, which is really neither commentary nor exegesis, is to be recommended to those who would know the author better and to those who, already knowing Kant, would profit from the record of an honest, head-on encounter with him. Students having difficulty with the original may benefit from the well-done paraphrases; but any who have not discovered the difficulties themselves will not be much aided in getting under the surface.

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AQUINAS. By F. C. COPLESTON. Baltimore, Penguin Books, 1955. Pp. 263. $.85 (paper).

Specialist and general reader alike will find Father Copleston's *Aquinas* a fine introduction to the thought of the Angelic Doctor. Books on medieval philosophy are too often addressed to medievalists only, without much effort to make clear that the medievals, behind their intricate and unfamiliar philosophical language, were dealing in large part with perennial philosophical issues. Medieval philosophers were Christians, and a good deal of their attention was turned to the problem of Christian philosophy, but such a direction of attention by no means implies the rigid limitation and austere constriction from which philosophy is often reputed to have been liberated by Renaissance and modern thought. No, the range of philosophical discussion during the Middle Ages was every bit as extended as that of other more enlightened epochs. True enough, there were at various times official condemnations of particular doctrines, but examination of the relevant documents usually discloses that the condemned doctrines were set forth just as ardently after such prohibitions as before. Our failure to appreciate the openness of medieval philosophizing has several causes: Latin itself; the unfamiliar philosophical terms; and related to this, the unusual contexts in which familiar

problems appear. This last difficulty may be very troublesome to the modern student; for example, the important medieval discussion of the problem of giving an exact account of local motion is to be found in the theological literature under the problem of how charity is augmented in any individual man.

All this has relevance to Copleston's book. The measure of his success is that he not only presents Aquinas' thought in thoroughly adequate summary, but that he also has very competently performed the necessary translations into contemporary terminology to indicate how Thomas was more often than not dealing with issues of permanent interest. Thus the central concern of metaphysics, customarily called the examination of being qua being, is here understood as the lexicography of the verb "to be." What do we mean when we say "to be"? And Aquinas' discussion of essence and existence has a contemporary analogue in the problem involving the distinction of meaning from reference. It cannot be a tribute to the facility and flexibility of modern philosophers that Copleston finds it necessary to translate Thomas' thought into ordinary language, but translate it he does, with clarity, insight, and a fine sense of contemporary pertinence.

What, then, does Aquinas' thought involve? He is a Christian, yes, and a theologian, fundamentally. But this does not at all imply any wrenched manipulation of his philosophical scheme to accommodate to his Christian persuasion. He wants to insist definitely on the autonomy of philosophy—in which certain truths are stated, some of which are specifically Christian—but this philosophy is not dependent on revelatory information for its adequacy, consistency, and completeness. As Copleston makes clear, Aquinas' complex includes a theology articulated from revealed truths and a thoroughly Aristotelian natural philosophy developed on the basis of evidence provided by the senses. The theology is *not*, however, a necessary capstone in terms of which lesser sciences are to be made complete, in terms of which our knowledge is to be made whole. Rather it is desirable to consider theology as superimposed on natural philosophy in some such sense as this: the two systems are no more than parallel, each with a distinct semantics, yet mutually translatable according to appropriate transformation rules. The systems operate on the basis of distinct rules and distinct principles, but Aquinas with supreme confidence takes it that they correspond at nearly every point. There would be a relationship of proportionality between propositions in the two calculi.

The crucial junctures that are presumed to confirm the possibility of mutual translatability throughout are the existence of God and the immortality of the soul. It is at these places that, as the famous commonplace has it, the water of philosophy is transmuted into the wine of theology. These are truths known certainly by faith, but they are independently accessible to unaided reason basing its activity on sensible evidence. (It should be remembered, incidentally, that not all of the propositions of faith are thus accessible; the doctrine of creation, and that of the Trinity, have not been grasped by reason unassisted. This task is not considered impossible, however; it just has not happened yet.) Copleston very properly deals with these crucial proofs at length, being always careful to stress Thomas' own thoroughness and caution. The word "caution" is used here advisedly, because Aquinas seems to have been well aware of the peculiar importance of these arguments, aware that he was there bridging the gap between the two systems, aware of the tremendous difficulties involved in maintaining an autonomous philosophy which nevertheless can lead us according to its own mode to Christian truths.

Are these attempts to justify the assumption that the two systems really correspond successful? The objections that are traditionally raised are (1) that the step from the world of finite existences to a transcendent infinite cause of their existence is not warranted, and furthermore, even if it were, that there is no reason to identify such a cause with the Christian God; (2) that the step from the immateriality of some of the soul's activities to its continued subsistence as individual, following the body's corruption, is not warranted. Such objections were doubtless involved in the suspicions directed at Aquinas by his Augustinian contemporaries, but there is a tendency among modern Thomist scholars to suggest that he has already met such criticisms by the novel way in which he has posed the problem. Briefly, Aquinas' distinction of essence from existence (what is signified by the definition of a thing and the act by which such essence has being), which was not important for Aristotle, for whom existence was a brute fact, indicates an awareness of a problem that the Stagirite failed to grasp, that of the contingency of existence. "But," adds Copleston (p. 124), "one can hardly admit that the existence of finite being at all constitutes a serious problem and at the same time maintain that the solution can be found anywhere else than in affirming the existence of the transfinite." This does not yet seem to be the Christian God, however, and so the argument continues: As pure existence, this cause is by that fact the plenitude of being, and consequently

infinite. As infinite being, such a cause can lack nothing, admit of no change, can be denied no perfection. But if the absolute act of existing is infinite, it is infinite in the order of being, and thus every perfection can be attributed to it, and it is perfect. And *this*, now, is indeed what all men call God.[1]

Thus, by advancing beyond Aristotle and raising the problem of the contingency of existence, Aquinas makes possible the step from finite things to the transcendent cause of their existence, the Christian God. Copleston recapitulates this interpretation with clarity and force. Furthermore, the essence-existence distinction is also employed in the proof for the immortality of the soul. During certain of its acts—the apprehension of universals—the soul is functioning in an immaterial status, independent of the body. Separated from its matter in this activity, as active form the soul nevertheless retains its essential and existential components. The corruption of the body in death similarly does not affect the existential aspect of the individual soul, and consequently it will survive.

Some questions might be asked of the proponents of this modern rendering. If the proof for God based on the contingency of existence is so central, how does it happen that Aquinas states explicitly that the proof from motion is the most irresistible? And how does it happen that the proof from the contingency of existence does not appear at all in the *Summa contra gentiles*, where of all places one might expect to find the most persuasive of arguments? To suggest, as Copleston does, that at least the contemporary rendering is not alien to Thomas' spirit, is to run the risk of losing sight of what the Angelic Doctor himself conceived that he was doing. Furthermore, if the proofs for God and immortality are so persuasive, how did it happen that most of Aquinas' contemporaries and immediate successors failed to see this and preferred to use some variation of the Augustinian mode? Is it more desirable to argue that centuries of ingrained Augustinianism blinded them to the possibilities that Thomas suggests, or to argue that, understanding his unusual solution, they felt that it was not entirely convincing?

Such doubts are directed toward the vexing problem of the interpretation of Aquinas, however, and not toward Copleston's excellent

[1] E. Gilson, *History of Christian Philosophy in the Middle Ages* (New York, 1955), p. 372, provides an effective statement of this. Father Joseph Owens, "The Conclusion of the *Prima Via*," *The Modern Schoolman*, XXX (1952-1953), 33-53, 109-121, 203-215, justifies in detail the irresistibility of Thomas' proof in terms of this new emphasis on existential act.

presentation of Thomas' thought, in which he is well aware of the difficulties in the philosophy as well as the very real virtues. (After all, Aristotelian metaphysics is a continuing discussion.) The St. Thomas who comes through is not the culminating "synthesizer" that we are too often lectured about, but an acute thinker struggling with the knotty problem of setting forth an autonomous philosophy that accommodates to the truths of Christian revelation. The degree of his success is arguable, however, and certainly by the fourteenth century such attempts to bridge the gap between the two systems had been abandoned, whether in Scotus' refusal to maintain an autonomous natural order or in Ockham's complete separation of natural philosophy from revealed theology.

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FORMAL LOGIC. By A. N. PRIOR. Oxford, Clarendon Press, 1955. Pp. ix, 329. $5.60; 35s.

To judge from the preface, this book is meant as a textbook covering the fundamentals. If by "fundamentals" is meant the propositional calculus, this claim is justified—but not if it means anything more. Of the book's three hundred pages, a hundred and forty-six are devoted to this subject, and eighty-two to traditional logic; the functional calculus and the set-theories of Russell and Lesniewski are stuffed into the remaining sixty-four pages. Considering that most of the discussion is on rather an advanced level, one must admit that this distribution reflects a queer personal slant.

Part I ("The Classical Propositional and Functional Calculi") is divided into four chapters. Chapter I introduces the truth table and Chapter II the axiomatic method in the propositional calculus. Chapter III gives several alternative axiomatizations. This means that the student will get a good deal of practice in formal deduction in the propositional calculus (where formal deduction is never needed in practice) and almost none in the first-order functional calculus (where it *is* needed) beyond the brief and eccentric discussion in Part I, Chapter IV. It is eccentric in the following respects: (1) The rules are not the usual ones, and I do not see that they suffice to prove "If for all x, Fx, then Fy." This *may* be possible, but it must be tricky; and in any case it is inexcusable that Prior does not give the derivation of such a basic theorem if it involves any difficulties.

(2) The higher-order functional calculi are introduced in a few breathless paragraphs (pp. 88-90), without any proper statement of rules. None the less, proofs couched in these calculi are frequent in the remainder of the book; one is meant, I suppose, to glean the rules from an examination of the proofs. (3) Almost a third of the chapter is given to Lesniewski's protothetic—surely somewhat excessive in a text which is meant as an introduction. All this space would have been better used for a detailed description of the higher functional calculi. In this protothetic part, Tarski is wrongly accused of favoring creative definitions (p. 97).

The impression produced on the student by Part I of Prior's book will be that the propositional calculus is a major center of current research, and the construction of systems thereof a prime concern of contemporary logicians. (The whole picture of logicians as people who construct systems, which is perhaps the commonest one amongst philosophers and mathematicians alike, is due to the badness of logic textbooks.) Aside from such *bizarreries* as protothetic, there are only two important roles which the study of the propositional calculus has in the training of a logician: (1) The ability to do truth-tables is a *sine qua non* of logical work of any kind. (2) Axiomatic propositional calculi afford practice in formal deduction and experience of systems which is another *sine qua non*. But axiomatic propositional calculi are dispensable; functional calculi *must* be axiomatically done, and proficiency in making proofs therein is completely indispensable. A student of the Prior book gets very little practice in such proofs, for the time that should be spent on that is consumed in studies of variant logics and other little-used and heterodox material. In short, the student is given much that he does not need, and he is not given much that he does need. At the same time his sense of proportion is twisted.

Part II ("The Traditional Logic of Terms") is odd in another way. Aristotle's logic is an excellent introduction to modern logic (current opinion notwithstanding)—but it belongs at the beginning because (1) it is nearer than the propositional calculus to most of the arguments used in everyday discourse; (2) it can be formalized pretty completely and is excellent training for the beginner in "seeing the form in the content"; (3) the functional calculus can be readily motivated as a method of dealing with problems implicit in syllogistic and as an extended version thereof.

All these pedagogical advantages are canceled by Prior's bizarre treatment of syllogistic in his second Part. For one thing, it is placed

after the functional calculus, which is used in its analysis. The sudden jumps from the more general and clear-cut to the less general, vaguer, and weaker will astound the student and make him feel that he has lost the thread of the argument. For another, the later chapters of the Part, dealing with the struggles of the Scholastics and De Morgan toward the functional calculus, will surely seem unmotivated to the student, who (if the functional calculus has soaked in) will already "know all the answers" to the questions they were struggling with and so will fail to see why such a fuss is being made over matters which should by now be quite transparent. It is as if one were taken to the summit of a mountain by car (or rather by space ship, recalling the *bizarreries* of protothetic) only to be flung down to the bottom again and compelled to make the ascent a second time on foot. Moreover, it will be an astute student indeed who recognizes in the cumbersome "logic of relations" of De Morgan discussed in Part II the same subject matter which he encountered in the guise of multiple quantification in Part I. For in his hurried ascent he has had scant time for a full view of the latter.

Part III, strangely titled "Modal, Three-valued and Extensional Systems," returns in Chapter I to propositional calculi. Modal systems of Lewis, von Wright, and Lukasiewicz are discussed in detail, and there are first-rate philosophical discussions of the problem of choosing one of these systems, of the combination of modality with quantification, and of the "deontic logics" of von Wright and Grelling. Chapter II is concerned with three-valued systems and with whether propositions about the future can be assigned the "third value" of such a system. Prior makes such a strong case for the unpopular affirmative answer to this that one can certainly regard the question as reopened. Both these discussions are on the very fringe of contemporary interest, though the student will certainly think from their length that they deal with problems at the heart of logic. They are the book's only original contributions.

An entirely unmotivated discussion of intuitionism concludes Chapter II. It perpetuates the erroneous and harmful impression, continuing throughout the book, of the logician as system builder. Prior is totally ignorant of the implications of the words "formalism" and "intuitionism" (see p. 217, n. 3, for a particularly hideous example).

Chapter III ("The Logic of Extension") contains a survey of *Principia* up to the natural numbers, and of Lesniewski's system. (Neither of these is extensional.) Prior's account of the smuggling

of classes into *Principia* (p. 268) is confused, but no more so than *Principia* itself. His inclusion of Russell's gropings here, instead of a forthright addition of the axiom of extensionality in the modern style, is as out of place in an elementary text as was his inclusion of De Morgan's gropings toward a calculus of relations. The false statement is made (p. 281) that the axiom of choice is needed for number theory.

The closing section (Lesniewski's ontology and mereology) is another luxury which should have made way for the omitted necessities. Moreover, it is badly done. No mention is made of the treatment of functions (so that the student cannot compare the system with Russell's as a foundation for mathematics); the relation between Lesniewski's epsilon and Russell's epsilon is left in the dark; and Lesniewski's symbol for "part of" is translated "member or element of," while his symbol for "physical sum" is translated as "class." The result is that the student will think that *mereology* rather than ontology is the theory of class membership.

The book ends with a list of axioms for about sixty systems (mainly of propositional calculus). This again will give the deplorable impression of logicians as men who construct systems from randomly chosen axioms. (The axioms in 10.4 and 13.3 contain misprints, but I attempt no emendation.)

The omissions of the book are even more peculiar than its contents. The indispensable groundwork of logic has three parts: the propositional calculus, the functional calculus, and Zermelo set-theory. The first two are mainly preliminaries to the third; this third is the only known adequate formulation of all mathematics. It is not even mentioned in this book; and the two questionable alternatives to it (*Principia* and Lesniewski) are merely outlined.

On the other hand, the book contains few errors—I think I have mentioned practically all of them above. And my criticisms apply to it only as a textbook—and as an influence on philosophers and mathematicians who are not professiona! logicians, who will obtain from it a terribly distorted picture of logic, which will cause them to have no respect for it. Its place is not in the classroom, but on the night table of a professional logician with an eye for curiosa.

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THEORY OF GAMES AS A TOOL FOR THE MORAL PHILOSOPHER. An Inaugural Lecture Delivered in Cambridge on December 2, 1954. By R. B. BRAITHWAITE. New York, Cambridge University Press, 1955. Pp. 75. $1.25.

Professor Braithwaite's inaugural lecture is a marvel of lucidity. Considerations of great interest to economists and philosophers are here presented with an admirable virtuosity that uses the most ingenious devices of simplification and illustration in the service of clear exposition.

The "Theory of Games" is a new, exciting, and dishearteningly complicated branch of mathematics. But the difficulties arise mainly in the solution of technical problems, and the basic ideas of the theory can be made relatively accessible to the nonspecialist.

Consider a simple "penny matching" game between two players, *A* and *B*, played according to the following rules: *A* and *B* independently place a coin upon the table; if the coins are both "heads" or both "tails," *A* receives a dollar, while if one coin shows "heads" and the other "tails," *B* receives a dollar. Here, each player has two "moves" (the choice of "heads" or "tails"), there are four "plays" (ways in which each particular game can be played), and a determinate "payoff" to each player for each such play. A player's "strategy" consists in the choice of a system according to which he decides to play, made once and for all and taking into account all possible responses of the opponent. If both players decide their strategies independently, the outcome of all contests between them is thereby determined. The actual *playing* of the game then becomes superfluous, and an impartial umpire to whom the strategies might be communicated could simply calculate the amounts due to either contestant.

The simplest strategy for *A* is always to make the same choice, say "heads" (a so-called "pure strategy"). It is clear, in this trivial instance, that the choice of a "pure strategy" by either player can always be defeated by his opponent. If *A* were to play heads invariably, his opponent could win every game by steadily playing tails. On the other hand, if *B* should decide on the pure strategy of invariably playing heads, *A* could win every game by playing heads. In short, neither player has a "best" way of playing, if he is restricted to the choice of a pure strategy: whatever he does can be nullified as soon as his opponent discovers the plan. Common sense readily suggests a solution for this trivial case. The rational procedure is for *A* to play heads and tails at random, and then his "expectation" of gain

in the long run is zero, no matter how *B* plays. Similarly, *B* ought to alternate heads and tails at random, and then his expectation of gain will likewise be zero. Neither player's plan (his "mixed strategy") can now be defeated, and since both contestants stand to profit equally, the game is a "fair" one.

Similar considerations apply to situations of enormously greater complexity. The same basic ideas lend themselves to extension to cases where each player has a number of alternative moves greater than two (even to games in which the number of possible moves is infinite), to cases where the available options depend upon the moves already made, where the number of players is greater than two, where information may be partly concealed and partly revealed to the players, where "chance devices" influence the outcomes, and so on. Most important, from the standpoint of possible application of the theory, is the possibility of identifying as "games" a large variety of situations in which two or more persons interact, with partial conflict of interests, to produce outcomes whose value to each depends upon the choices of all. Thus bargaining situations, competition between firms, a statistician's choice between theories supported by samples (a "game" against "Nature"), and many other situations that one would be surprised to hear described as "games" can be discussed in terms of the concepts and techniques developed within a single mathematical theory. One feature of great potential interest to a philosopher is the demonstration that in many "game"-like situations where a simple maximizing of value is impossible, there are nevertheless to be found *rational* ways of behaving (mixed strategies) which would satisfy a reasonable man as being acceptable solutions of the problem of intelligent choice.

Braithwaite makes much of his argument turn upon an exemplary "game" between two men, Luke and Matthew, living in adjacent but not soundproof apartments, whose tastes run to the playing of classical music and jazz, respectively. There is, therefore, a "competition" between the two of them for the use of the time at which they can play. We have four possible ways in which the "contest" can be conducted (both playing simultaneously, both silent, one playing while the other is silent), and given the relative values to each of the men of the various possible outcomes, the "best mixed strategies" for both can be computed according to principles worked out in Morgenstern and Von Neumann's classical treatise.

The peculiar interest of the kind of case that Braithwaite discusses in detail is that the "game" is one that is *not wholly* competitive.

Luke can choose a "prudential strategy" (a plan for the frequency with which he will play the piano) that can assure him an expectation of gain that cannot be thwarted by any counter measures taken by Matthew; and Matthew has a corresponding prudential strategy, which cannot be interfered with by any reprisals on Luke's part. But there remains what Braithwaite calls a "co-operator's surplus," a further gain to each, over and above the gain to be expected by playing the prudential strategies, that *could* be achieved by joint agreement between the contestants. Yet any departure from his own prudential strategy exposes each player to the risk that he might receive *less* than the gain to be expected from the prudential strategy (i.e., if his opponent breaks the compact for sharing the surplus). On the other hand, if they *can* both agree upon a "joint strategy" (a method for "playing the game" to which both will conform), gain will result to each. Conflict between the bargainers will accordingly turn upon the proportion in which the "surplus" is to be divided—a problem that might well appear insoluble in the absence of any interpersonal standard for the mutual comparison of the bargainers' respective utilities. It is at this point that the conceptual apparatus of the theory of games proves rich enough to suggest rational solutions (and so, incidentally, to provide ways for the interpersonal comparison of ostensibly incomparable utilities). The analysis culminates in the formulation and defense of principles upon which the "surplus" is to be divided (which, in turn, determines which "mixed strategy" is to count as "reasonable" and so acceptable to all parties).

Braithwaite's solution is too complex to be reproduced briefly. It impresses me as ingenious and almost wholly convincing. Certainly it represents a substantial advance upon the previous constructions of John Nash and Howard Raiffa (of which Braithwaite takes explicit account). It is much to be hoped that the success of this first foray will encourage Braithwaite to undertake further analysis of the logic of semicompetitive co-operation. The mathematical appendix in which he develops the theory of a class of cases more general than the single instance treated in the body of his lecture indicates that his leading ideas may lend themselves to further generalization.

I hope I have said enough to whet the appetite of philosophers interested in problems of choice and value. Braithwaite's discussion of the possibility of the ordinal (nonmetrical) measurement of the relative strength of preferences (building upon a method suggested by Ramsey) has direct application to problems of ethics. But potentially

the most valuable aspect of his argument is the liberating effect of seeing that typical problems of conflicts of interests need not be discussed in terms of older and oversimple models of maximization of value.

This little book is handsomely produced. Braithwaite's ingenious device for the graphical representation of strategies (a series of tangents to an enveloped parabola) is reproduced on the cover.

MAX BLACK

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THE LANGUAGE OF TAXONOMY. An Application of Symbolic Logic to the Study of Classificatory Systems. By JOHN R. GREGG. New York, Columbia University Press, 1954. Pp. ix, 70. $2.50.

To do his work well a taxonomist need know nothing about the logical basis of hierarchical classification; any error arising from this source would be so quickly evident in practice that it would never be made. Nevertheless it is well that the subject be examined, though it is extremely simple and holds few surprises.

The required mathematics is that of set theory; the elements of the sets are specimens, and the sets themselves are circumscriptions, such that by a finite series of observations every specimen can be unambiguously included in or excluded from any given circumscription. It is easy to define logically "descriptions" to serve as operational procedures for doing this. A "hierarchy" is a system of sets, here called "taxa," classified in ranks from 1 to n inclusive, such that the members of a taxon of rank n are taxa of rank $n-1$, the specimens being counted as of rank 0; and such that no two taxa of the same rank have any member in common. The "extension" of a taxon is the join or set-sum of the extensions of its members, the extension of a taxon of rank 1 being the taxon itself; the members of an extension are specimens, whereas those of the corresponding taxon are other taxa.

Set out in full, with proofs of the necessary theorems, this "theory" would barely run to two thousand words; Professor Gregg, however, has said less in twenty thousand. This is achieved firstly through his including some extremely elementary expositions which one would think unnecessary for any reader not deterred by the title page; since he uses the elaborate and quite unnecessary notation of Woodger, such expositions can be lengthy. Secondly, with the same end in view, he sets out every statement, from the simplest to the most

complex, in symbolic form as well as in clear. But the main space filler has been his following J. H. Woodger in defining a hierarchy not as a system of sets but as a relation. The relation in question is that of set-inclusion applied to the extensions of taxa; as proved in all elementary manuals this is a partial-ordering relation, and in this context it generates partially-ordered systems having the property that *every* subsystem has a unique greatest element and one or more least elements. It is in fact true that one can deduce all the properties of a taxonomic system from this, though it is a very tortuous approach to a very simple subject; unfortunately, Gregg makes a mistake in failing to distinguish between a taxon and its extension (easy to do, if instead of naming the objects of discussion one must needs attach alphabetic labels to sets or relations to which they belong!). As a result of this, he fails in the end to describe a taxonomic system even in his own symbols.

Those of us who are trying to apply mathematics to biological problems are always troubled by the miscomprehension between these disciplines, and this unfortunately can only be made worse by this kind of publication. In conclusion, it should be said that there is a respectable school of taxonomists today prepared in some contexts to waive the nonoverlapping property of taxa. Time marches on!

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AN INTRODUCTION TO PHILOSOPHICAL ANALYSIS. By JOHN HOSPERS. New York, Prentice-Hall, Inc., 1953. Pp. xii, 532. $5.95.

The philosophical position and quality of this text place it between such older introductions as Durant Drake's *Invitation to Philosophy* and those that will probably soon appear with the new language emphasis (postpositivistic) all the way through. On the whole, it is closer to the epistemological tradition than to the current linguistic practice, as becomes most evident in a chapter near the end on perception, where something like dualistic realism, after phenomenalism, is finally hinted at. Yet the first chapter, on "Words and the World," is the second longest one in the book.

In this chapter, the usual fundamental points, some elementary and some fairly sophisticated, are made about the distinctions between expressions, their meanings, and the states of affairs meant, if any.

Ordinary use is allowed some power to determine meaning, and this is wisely distinguished from the *truth* of the expressions which ordinary *use* leaves undetermined. The various sorts of definitions are considered, including the ostensive; and finally various kinds of senses are distinguished—the statemental (true-false), the emotive, and the pictorial, with some mention of C. L. Stevenson's persuasive definition as a nonlogical sort. The ways in which vagueness and ambiguity function are described and accounted for. The questions and exercises at the end of this chapter are helpful.

The second chapter considers necessary knowledge, under such heads as rationalism and empiricism, analytic and synthetic, possibility, and intuitionism, with astute suggestions as to how to salvage what is rightminded in all of these notions. The discussion of these themes shades off into an examination of empirical knowledge in the next chapter, where the recurrent questions about the certainty and probability of empirical statements are raised, together with the problems, partly metaphysical, centering around the empirical meaning criterion. And this issue develops, in the fourth chapter, into an analysis of the concepts of causality, determinism, and freedom; in the proper aftermath of which is an examination of mechanism, vitalism, and the concepts of deity, the mental, and the physical, in the next chapter.

This gets us to the sixth chapter on perceiving the world, where naive and representative realism are presented, along with subjective idealism and phenomenalism, in a way that shows the increasing sophistication of epistemological thinking in the last position. Further criticism of phenomenalism, however, suggests a new dualism, better than any of the four alternatives.

In the last two chapters, the issues of ethics and aesthetics get aired, the fundamental distinctions being made with the help of the dichotomy between "naturalism" and "nonnaturalism." The author's previous work in the field of aesthetics, formulated in his *Meaning and Truth in the Arts* (Chapel Hill, 1946), bears fruit in this seventh chapter on the philosophy of art. He suggests that "the most fruitful and challenging kind of enterprise in the philosophy of art lies in the detailed analysis of meaning" of the key terms used by aestheticians (p. 522), such that "the field of aesthetics is one which is just beginning to be cultivated" (p. 523).

In such connections, the reader feels the need of more explicit commitments from the author than he gives. But perhaps this is the virtue of the book throughout. Important alternative positions are

presented, without any single one of them bring fervently espoused and defended. A good introductory text should be like a light that reveals various positions, with just enough color in the light to make the author's preferences look a little more attractive than the other alternatives, without a militant elaboration and defense. Thus the student is made to linger a little longer over the author's persuasions, without realizing, as a student, that these are preferred.

Because of this gentle abstinence on the part of the author, I have not here attempted a studied critique of the position, or positions, presented in this textbook. It deserves the printing it is going to get in a British edition, where it will continue the good work of introduction to philosophical analysis.

In 1955 I used the book in Japan as text for courses at Kyoto University and Doshisha University. It was an eye opener for students accustomed mainly to heavy expositions of Hegel and Kant. But it also was bewildering. I remember the dialectical student's reaction to Hosper's remarks (following M. Schlick and H. Feigl) on the various senses of "possible." It annoyed the student to read that a cat's giving birth to pups is "logically possible," though, of course, not biologically (p. 99); or that the historical succession of states of affairs is not "logically necessary." He vehemently warned the class and me that this manner of speaking about what is logically possible is irresponsible and dangerous, encouraging carelessly reached conclusions.

A part of the student's difficulty was doubtless his previous philosophical training, or lack of it, relative to analytical details. Yet I got the impression that the trouble stemmed partly from Hosper's having himself been at times a little too wordy and not elemental enough in his treatment of such distinctions, thus missing some of the nuances. And by "elemental" I do not mean just "elementary."

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OUTLINES OF JAINA PHILOSOPHY. By MOHAN LAL MEHTA. Jain Mission Society, Bangalore, India, 1954. Pp. 168, $1.50.

Mr. Mehta is a research scholar of Parsvanath Vidyapith, affiliated with Benares Hindu University. One naturally welcomes an exposition of Jainism from within the fold. Of the Indian schools of philosophy, Jainism so far has attracted the least attention of scholars and thinkers

in the West and even in the East, in spite of the fact that the Jaina community is the richest in India and is eminently capable, if it is interested, of subsidizing and endowing Jaina studies. Its philosophy therefore has not been well understood and explained.

In India all philosophy originated in religion and has remained attached to religion, which is an advantage for religion but a disadvantage for philosophy: the former because religion has become rationalised and universalised; the latter because, owing to the religious sentiment attached to philosophy, its followers tend to defend its tenets forever, but never try to improve them even when found wanting. However, Jainism has excelled even Buddhism in two respects, both of which have a high ethical motive: respect for life and respect for all doctrines. The former is the doctrine of *ahimsā* (nonviolence, noninjury), and the latter is *syādvāda* (conditioned predication, often wrongly translated as conditional predication). As Buddhism is known more over the world than Jainism, *ahimsā* is generally credited to Buddhism. Buddha preached compassion for every creature in the universe but did not push the doctrine of *ahimsā* to an extreme; but Mahavira, the founder of Jainism, carried it to the logical extreme possible. Jainism is interesting both for its logical and ethical disciplines.

Mehta's book forms a useful and readable introduction to Jaina philosophy and presents its metaphysics, logic, epistemology, and ethics in outline. The word "ethics" has to be understood in the sense of discipline leading to ultimate realization of one's original nature. Jaina philosophy is realistic, pluralistic, and relativistic in ontology; relativistic in logic and theory of knowledge, and on the whole ascetic in its ethics and religion. Unlike Buddhism, neither its metaphysics nor its ethics underwent appreciable change. Hence Jaina philosophy may not show so much of grandeur and humaneness as entered Buddhism with the Mahasanghikas and became prominent in later Mahayana; but it showed greater self-discipline and strictness in renunciation and asceticism and in the practice of *ahimsā*. Vegetarianism is more due to Jainism than to Buddhism.

Ancient theories of substance, matter, causation, and the like, as philosophy progresses, become less important than doctrines of spirit, logic, and ethics. The self-justification which some religions seek by showing that some of their doctrines agree with recent scientific theories is a practice that requires reconsideration. For if a religion is to be considered great because some of its doctrines agree with modern science, then should or should not those doctrines which do not agree with modern science be given up and the religion re-

constituted? Further, if we are to judge a religion with modern science as the standard, will it not be safer to accept modern science and discard religion? If we are not prepared to do so, we should reflect and find out why we should not. No greater value need be attached to the agreement than that some of the speculations of the religious leaders about the phenomenal world are correct and so far the religion is rational and universally acceptable. The greatness of Jainism lies in its being a philosophy of life and of tolerance, both in theory and practice.

In metaphysics, Jainism is a philosophy of substance: to be is to be a substance. Thus even activity (*karma*) is a substance, not a category different from substance. Another peculiar doctrine is that the soul is extended, which follows from its being a substance, as almost all substance is extended according to Jainism. When the Vedantins say that the *ātman* (self) is infinite and is found everywhere, they do not mean that it is infinitely extended, but that it is beyond all extension, beyond all limits imposed by space and time, That *ātman* is everywhere may be misunderstood to mean that it is spread out in space and time. In this respect the Jaina and the Vedantic doctrines are diametrically opposed. It is mind (*manas*) that comes into contact with the object, not the *ātman* of the Vedantins. Mehta's discussion of the Jaina conception of soul (*jīva*) as equal in extension to body should be read with this distinction in mind, as otherwise one may be misled. The doctrine of the size of the soul (*jīva*) as equal to that of the body is peculiar to Jainism in Indian thought. With this is associated the Jaina nondifferentiation between *jīva* and *ātman* (soul and self). The Jainas say that the latter is the former in its liberated state.

A detailed and systematic study of *syādvāda* (doctrine of conditioned predication) and *nayadāva* (doctrine of standpoints or aspects) is still wanting. There have been presentations of both, but not deep enough. Mehta has not committed the usual mistake of translating *syād* by "possible," "maybe," but by the word "relatively" (p. 118), which is a good interpretation, though not a translation. The word is grammatically the conjugated potential form of the verb *as* (to be), and may mean "Let it be," "It can be," or "It may be." The Jainas want to use the word as an indeclinable (*avyaya*). Taking the last sense, one may wrongly interpret *syādvāda* as skepticism and doubt. Everything has many aspects, like prehensions in Whitehead's philosophy. So if from one aspect a thing is existent, from another aspect it is nonexistent, and so on. Assertions like "*X* exists," "*X* does not

exist," are seven in number according to Jainism, and all are assertoric, not problematic.

Here I wish to raise a question, not necessarily about Mehta's interpretation, but about the Jaina conception of the fourth predication from among the seven. The seven predications, if we leave out the word *syād* for convenience, are: "*X* is existent," "*X* is not existent," "*X* is existent and is not existent," "*X* is indescribable," "*X* is existent and indescribable," "*X* is not existent and is indescribable," and "*X* is existent, is not existent, and is indescribable." Regarding the fourth proposition, "*X* is indescribable," I wish to ask whether it is a synthesis of "existent" and "not existent." In Sanskrit the words used are *avāchya* and *avaktavya*, which can be safely translated as unpredicable, indescribable, unspeakable, and inexplicable. Now, *X* is unspeakable because it is taking two opposed predicates, "existent" and "not existent" or if we generalize, *P* and not-*P*. (The Jainas did not know the difference between non-*P* and "not *P*.") *P* and not-*P* are mutually destructive (*parasparanāśinau*). But if we say "*X* is existent and also not-existent," we are certainly speaking, predicating, and describing. *X* becomes unpredicable only when we speak of it neither as existent nor as nonexistent. Then to say "*X* is existent and nonexistent" is not to synthesize "existent" and "nonexistent," but to reject both together as each cancels (*nāśayati*) the other. Though some Jainas seem to think of it as a synthesis (p. 121), it cannot really be so; otherwise, the use of the words "unspeakable" and "indescribable" would be pointless. If we treat it not as a synthesis but as a denial of both the opposites, we shall be in accordance with the general spirit of Jainism, which tries to accommodate all the rival doctrines. Here it wants to give a place to the Advaita and some forms of Buddhism. This is a question of interpretation; but it is through such interpretations that the deeper implications of our ancient doctrines can be brought to the surface and utilized for further progress of world thought.

Though presenting only the outlines of Jaina philosophy, Mehta has done well to refer to its differences from the rival schools of Indian philosophy; this helps a clear understanding of ideas. The book can be used by all beginners of Jaina philosophy. But Western readers, who have no knowledge of Sanskrit terms, cannot easily follow it, as too many Sanskrit words, some of which are long compounds, are used without English equivalents.

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THE PHENOMENOLOGICAL APPROACH TO PSYCHIATRY. An Introduction to Recent Phenomenological Psychopathology. By J. H. Van den Berg. Springfield, Ill., Charles C. Thomas, 1955. Pp. x, 105. $3.00.

On May 24, 1798, Dr. Pinel, a physician for the Paris Asylum for Male Lunatics, in spite of grave warnings, entered the cell of a "dangerous lunatic," and in simple words promised to take off his chains and set him at liberty provided that he behave in an orderly fashion. This patient was an English captain who had been chained for forty-five years and was feared more than all the other inmates because, among other things, he had already killed an attendant. After some conversation, the patient became convinced that the doctor was in earnest and promised that he would not make any trouble. At this point the chains were removed and the patient stumbled out of the cell. The first day he walked about the asylum, joyfully pointed at the sky he had not seen for many years, and willingly returned to his cell. He remained for two more years in the asylum, behaved in an orderly way, and assisted the nursing staff at their work to the best of his ability. As Dr. Van den Berg points out, this was the beginning of a "scientifically adjusted psychiatry."

He also points out that this new attitude toward mental disease was an outgrowth of the new view of man and of human liberty which underlay the French Revolution. This important book is an attempt to clarify the new view of man which is now emerging from phenomenological research and its implications for psychiatry. It will be of great interest not only to psychotherapists but, because of its concern for fundamental facts and principles, to philosophers as well. I know of no work in English where the major results of recent phenomenological study are more exactly and clearly expressed. The author states that phenomenology is "a science of examples," and the work is filled with concrete references to particular cases. Nevertheless, the author also has a penetrating interest in theory and possesses an exhaustive knowledge of the relevant psychiatric and philosophic literature.

He begins by revealing the many ways in which the Cartesian dualism of mind-*thing* and body-*thing* have influenced both present-day common sense and psychiatric practice. Thus, we speak of the mentally sick as "projecting" their own private feelings and attitudes into the external world, which is really quite divorced from them. Such "projection" has even become an accepted technical term of psychiatry. The author shows with great cogency that this widely accepted theory

agrees neither with psychopathic phenomena nor with the evidence of normal human experience. Human awareness is not locked up within a substantial container but is always already projected into a spatial, temporal world-field. Psychiatric disorders are not contained within the mind of the patient. They affect the whole way of existing of the patient and the world which is a necessary part of this existence. We cannot understand "mental" disease exclusively in terms of physical and psychical abnormalities. We must come to understand the disordered structure of the whole world in which the patient exists.

The sick human being will often "imagine" that certain organs, in which the skilled observer can find nothing wrong, are really diseased. On the basis of half-conscious Cartesian assumptions, the psychiatrist uses the technical term "conversion" for such phenomena. The patient is converting or associating an inner psychic disturbance with something in his body. Dr. Van den Berg shows again that this Cartesian theory finds no support in the actual phenomena. What it fails to realize is that "the body as it is described in the medical textbooks (the body that we have)" must be sharply distinguished from "the body as it plays a part in the non-scientific ... pre-reflective life of man (the body that we *are*)" (p. 42). What the patient who complains of heart palpatations is speaking of is not the organ which can be objectively analyzed by the anatomist and heart specialist. This object of detached inspection may be fully intact. The patient is speaking rather of "the heart that can leap into my mouth, that can sing, that is occasionally worn on the sleeve, that can be broken by words, or by a gesture, or by a look" (p. 43). The body *as lived* is very different from the body *as inspected*. The author succeeds in giving an illuminating account of the light which recent phenomenology has shed upon this lived body that is not an "object" but rather a necessary part of human existence.

In considering actual psychiatric cases, Dr. Van den Berg also points out similar difficulties in other technical terms, such as the "transfer" of a feeling from one person to another, which ignores the intentional structure of all human feeling, first clearly revealed by Franz Brentano. In criticising this conception of purely psychic feeling, the author points to many phenomena, both normal and abnormal, which show how feelings are always referential, physically expressed, and therefore open to direct perception, though not to that special mode of detached inspection which has proved so successful in physics. Under the guidance of phenomenology, modern psychiatry is realizing that in order to help the patient who is humanly sick,

it is necessary first of all to let him speak for himself and to gain some direct understanding of the pattern of his world, the world in which he lives and which belongs to his existence (p. 102). Once this is achieved, it may then be possible through sympathetic contact and understanding to encourage the patient also to gain further understanding and to change his mode of being by his own choice.

Dr. Van den Berg gives a brief but adequate summary of recent phenomological investigations of the nature of human time, several of which have important psychiatric implications. He also describes, with particular emphasis on its medical aspects, the suppression of death which has become such a marked phase of modern technological culture and the deep anxiety which follows in its train. He makes some interesting remarks on the breakdown of the concepts of subject and object, which have failed to stand up under disciplined observation (p. 92). He maintains that while there are, of course, many facts of which any individual is unconscious, the notion of a distinct faculty, *the* unconscious, is not supported by the evidence. He believes that it is a hasty assumption arising from the lack of precise analysis.

This small book is packed with real insight and information. It is of special interest to empirically minded philosophers at the present time because of the wealth of significant data to which it points. There are vast fields of unexplored evidence which cannot be approached by the special methods of the restricted sciences and which cry out for investigation. A bare beginning has been made, largely through the efforts of past philosophers. Can those now living meet this modern challenge?

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MONTAIGNE'S DISCOVERY OF MAN. The Humanization of a Humanist. By DONALD M. FRAME. New York, Columbia University Press, 1955. Pp. 202. $3.50.

An intellectual biography with hundreds of footnotes to attest to its scholarly sophistication, Professor Frame's book suggests a new approach to the understanding of Montaigne's *Essays*. For the last forty years Montaigne scholarship has been dominated by the almost Hegelian interpretation of Pierre Villey. According to Villey, most of the apparent contradictions in the *Essays* are really changes of opinion, Montaigne's thinking having evolved from a "Stoical period" to a "skeptical crisis" and from that to a culminating "Epicurean

period." While Frame insists upon an "evolving Montaigne" of a similar sort, he thinks that earlier critics such as Villey lumped together different stages of the essayist's development and failed to understand their relation to contemporaneous events. Frame sees the early Montaigne first as "the young hedonist" and then as "the apprehensive humanist," and after "the skeptical revolt" he divides the later period into a series of temporal stages toward greater and greater understanding of others, love of general humanity, and reliance upon the good sense of the Socratic everyman rather than the abstruse learning of the Stoical sage. "By insisting that humanism be broadly humane, he moved its center of gravity from the scholar to the intelligent man in general" (p. 168).

There are two important respects in which I found the book unsatisfying. First, it does not succeed in carrying out its program. Frame wishes to relate Montaigne's writings to his life in the hope of showing how the latter influenced the former. For the most part, however, he merely puts the two in juxtaposition: a significant influence is rarely disclosed. In the chapter on "the skeptical revolt," for instance, the summary of "Apology for Raymond Sebond" is preceded by a brief history of events in France between 1573 and 1576, together with the very little that is known about Montaigne's activities at the time. The "organic quality of the unfolding of [Montaigne's] thought" is never presented. In criticising earlier scholarship, Frame asks, "How . . . does 'Stoicism' lead to 'skepticism,' and 'skepticism' to 'Epicureanism'?" The book does not answer this question, and one begins to wonder just what it was, just what kind of pineal gland, the author thought he was looking for.

More distressing, perhaps, is the interpretation of the *Essays* which develops from chapter to chapter. The author claims to trace the evolution of a Montaigne who subscribes first to Stoical humanism and eventually to a position more naturalistic, more empirical and eudaemonistic. Actually, however, "the young hedonist" sounds very much like the old lover of life, and "the apprehensive humanist," for all his concern about learning how to die, is no more of a Stoic than the later naturalist. (In one important detail, the early Montaigne is *less* like the Stoics than the later essays showed him to be: I am referring to the fact that in early life Montaigne denied that pain could be good in any sense, whereas he later concluded that it was instrumentally valuable for the awareness of pleasure.) Furthermore, the author never even attempts the careful analyses that would be needed to substantiate belief in the prescribed interpretation; and

Montaigne's suggestive ideas about reason, self, nature, and moral responsibility are nowhere given the treatment they deserve. In general, one feels that Frame, like other scholars before him, has shaped a constraining net about the leaping thoughts of a rich and various author. At the same time, Montaigne himself shows through often enough, as in the well-chosen quotations, to give the book a certain interest.

IRVING SINGER

University of Michigan

THE WORKS OF GEORGE BERKELEY, BISHOP OF CLOYNE. Vol. VII. Edited by A. A. LUCE and T. E. JESSOP. Edinburgh, Thomas Nelson and Sons, Ltd, 1955. Pp. viii, 389. 30s., net.

The first part of Volume VII in the new edition of Berkeley's works contains homiletic and exhortative writings: drafts of sermons, only one of which Berkeley published, and twelve essays printed in the *Guardian*. There is little of philosophic interest here; and what there is, arguments against free thinkers and reflections on the relations of duty and interest and of morality and religion, is better expressed in *Passive Obedience* and the *Alciphron*. In the second part we have journals written in Rome and Southern Italy in which Berkeley records, among other things, his impressions of paintings, sculpture, and architecture, his reactions to the practices of the Roman Church, and observations of such diverse phenomena as Vesuvius and the *tarantati*. It is a misfortune that no more of these journals remain and a greater misfortune that Berkeley did not use them to write the travel book that he seems to have intended. There are also, in the second part, documents relating to the ill-fated St. Paul's College in Bermuda. Smaller pieces include a letter to a friend contemplating conversion to Roman Catholicism, ecclesiastical addresses, verses, inscriptions, Berkeley's will, and a letter written by his widow.

The remaining volumes in this set (VIII and IX) will contain Berkeley's letters, a commentary on the letters, and a general index. Professor Luce, the coeditor Professor T. E. Jessop, and the publishers of the *Bibliotheca Britannica Philosophica* deserve the highest praise for this excellent edition of Berkeley's works. Like the Adam and Tannery edition of Descartes, it is a fit tribute to an important philosopher.

WILLIS DONEY

Ohio State University

BOOKS RECEIVED

Introduzione alla logica della scienza. By Francesco Albergamo. Firenze, La Nouva Italia, 1956. Pp. iv, 172. L.900.

The Age of Enlightenment: The Eighteenth Century Philosophers. By Isaiah Berlin. Boston, Houghton Mifflin Company, 1956. Pp. 282. $3.00.

Contemporary European Philosophy. By I. M. Bochenski. Translated from the German by Donald Nicholl and Karl Aschenbrenner. Berkeley, University of California Press, 1956. Pp. xviii, 326. $5.00.

The Chance Character of Human Existence. By John Brill. New York, Philosophical Library, 1956. Pp. 150. $3.75.

Meaning and Necessity: A Study in Semantics and Modal Logic. 2nd edition, enlarged. By Rudolf Carnap. Chicago, University of Chicago Press, 1956. Pp. x, 258. $5.00. — The main body of the text is unchanged but a supplement is added containing five previously published articles.

Introduction to Mathematical Logic. Vol. I. By Alonzo Church. Princeton, Princeton University Press, 1956. Pp. x, 376. $7.50.

Risk and Gambling: The Study of Subjective Probability. By John Cohen and Mark Hansel. New York, Philosophical Library, 1956. Pp. x, 153. $3.50.

An Introduction to Scholastic Philosophy. By Maurice de Wulf. Translated by P. Coffey. New York, Dover Publications, 1956. Pp. xvi, 327. $3.50 (cloth); $1.75 (paper).

Scientific Humanism and Christian Thought. By D. Dubarle. Translated by Reginald Trevett. New York, Philosophical Library, 1955. Pp. viii, 119. $3.75.

Thresholds of Existence: A Cosmogony and Theory of Evolution as a Way of Life. By Upton Clary Ewing. New York, Philosophical Library, 1956. Pp. xv, 286. $3.75.

Political Theory. By G. C. Field. London, Methuen & Co., Ltd., 1956. Pp. xvii, 297. 18s. net.

Neopositivismo e scienza del diritto. Vol. VII of Publications of the Institute of Philosophy of the University of Genoa. By Virgilio Giorgianni. Roma, Fratelli Bocca Editori, (no date). Pp. 358. L.2200.

Philosophie de la Révolution Française précédé de Montesquieu. By Bernard Groethuysen. Paris, Librairie Gallimard, 1956. Pp. 306. Fr. 900.

The Destiny of the Mind: East and West. By William S. Haas. New York, The Macmillan Company, 1956. Pp. 327. $6.50.

Clear Thinking. An Elementary Course of Preparation for Citizenship. By R. W. Jepson. New York, Longmans, Green and Co., 1956. Pp. xii, 268. $1.65.

Essentials in Problem Solving. By Zuce Kogan. New York, Arco Publishing Co., 1956. Pp. 119. $3.00.

La Philosophie de l'histoire de la philosophie: A collection of essays by various authors. Bibliothèque d'Histoire de la Philosophie. Paris, J. Vrin, 1956. Pp. 208. No price given.

Whitehead's Philosophical Development: A Critical History of the Background of Process and Reality. By Nathaniel Lawrence. With a Foreword by Stephen C. Pepper. Berkeley, University of California Press, 1956. Pp. xxi, 370. $5.00.

Philosophical Papers and Letters. 2 vols. By Gottfried Wilhelm Leibniz. Translated and edited with an Introduction by Leroy E. Loemker. Chicago, University of Chicago Press, 1956. Pp. x, 1228. $6.50 each; $12.00 set.

The Meeting of the East and the West in Sri Aurobindo's Philosophy. By S. K. Maitra. Pondicherry, South India, Sri Aurobindo Ashram, 1956. Pp. viii, 451, xxiv. $3.75; 19s. 6d.; Rs. 9/12.

Les Formes du mouvement chez Bergson. By Angele Marietti. Paris, Joseph Vrin, 1953. Pp. 127. No price given.

Patterns of a New Philosophy. By Frederick Mayer and Frank E. Brower. Washington, Public Affairs Press, 1955. Pp. vii, 112. $3.25.

The Reality of Substance. By Robert E. McCall. Washington, Catholic University of America Press, 1956. Pp. xiv, 202. $2.25 (paper).

L'infinito nel pensiero dell'antichita classica. By Rodolfo Mondolfo. Firenze, La Nuova Italia Editrice, 1956. Pp. x, 635. L.4.500 (br.); L.5000 (ril.).

L'Univers Leibnizien. By Joseph Moreau. Paris, Emmanuel Vitte Editeur, 1956. Pp. 256. Fr. 1200.

Toward Science in Aesthetics: Selected Essays. By Thomas Munro. New York, Liberal Arts Press, 1956. Pp. xv, 371. $5.00.

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The Examined Life: An Introduction to Philosophy. Edited by Troy Wilson Organ. Boston, Houghton Mifflin Company, 1956. Pp. xii, 404. $5.00.

La filosofia dell'organismo di A. N. Whitehead. By Concetta Orsi. Napoli, Libreria Scientifica Editrice, 1955. Pp. iv, 157. L.1000.

Il concetto dell'arte in Dewey e in Berenson. By Domenico Pesce. Firenze, La Nuova Italia, 1956. Pp. xviii, 118. L.600.

Plato's Phaedo. Translated with an Introduction and Commentary by R. Hackforth. Cambridge, Cambridge University Press, 1956. Pp. x, 200. 21s.

Plato: Philebus and Epinomis. Translated with an Introduction by A. E. Taylor. Edited by Raymond Klibansky. New York, Thomas Nelson & Sons, 1956. Pp. vii, 272. $5.25.

Mystery and Mysticism. By A. Plé, Louis Bouyer, L. Cerfaux, Ian Hislop, and A. Leonard. New York, Philosophical Library, 1956. Pp. v, 137. $4.75.

Studies in Human Time. By Georges Poulet. Translated by Elliott Coleman. Baltimore, The Johns Hopkins Press, 1956. Pp. xi, 363. $5.00.

Proceedings of the Second International Congress of the International Union for the Philosophy of Science: Zürich, 1954. 5 vols. Neuchatel, Éditions du Griffon, 1955. Pp. 744. Fr. s. 38. — Topics include theory of knowledge and linguistics, philosophy of mathematics and physics, sociology and psychology, philosophy and science, and the history of philosophy.

The Enduring Questions: Main Problems of Philosophy. By Melvin Rader. New York, Henry Holt and Company, 1956. Pp. ix, 564. $5.50.

The Direction of Time. By Hans Reichenbach. Edited by Maria Reichenbach. Berkeley, University of California Press, 1956. Pp. xi, 280. $5.50.

The Revolution in Philosophy. By A. J. Ayer and others, with an Introduction by Gilbert Ryle. New York, St. Martin's Press, 1956. Pp. v, 126. $2.50.

Being and Nothingness: An Essay on Phenomenological Ontology. By Jean Paul Sartre. Translated and with an introduction by Hazel E.

Barnes. New York, Philosophical Library, 1956. Pp. lxix, 638. $10.00.

L'uomo questo "squilibrato": Saggio sulla condizione umana. By M. F. Sciacca. Milano, Fratelli Bocca Editori, 1956. Pp. 331. L.2500.

Instant et cause: Le discontinu dans la pensée philosophique de l'Inde. By Lilian Silburn. Paris, Librairie Philosophique J. Vrin, 1955. Pp. 439. No price given.

The Quest of the Divine: An Inquiry into the Source and Goal of Morality and Religion. By Alexander F. Skutch. Boston, Meador Publishing Company, 1956. Pp. 440. $3.50.

Sensism: The Philosophy of the West. 2 vols. By Charles Smith. New York, The Truth Seeker Company, 1956. Pp. lxxiv, 1612. $10.00.

Logic, Semantics, Metamathematics. Papers from 1923 to 1938. By Alfred Tarski. Translated by J. H. Woodger. New York, Oxford University Press, 1956. Pp. xiv, 471. $9.60.

Ordinal Algebras. By Alfred Tarski. With Appendixes by Chen-Chung Chang and Bjarni Jonsson. Amsterdam, North-Holland Publishing Co., 1956. Pp. 133. $3.60.

Aristotle. Rev. ed. By A. E. Taylor. New York, Dover Publications, 1956. Pp. 118. $2.75 (cloth); $1.00 (paper).

Living and Knowing. By E. W. F. Tomlin. New York, Harper & Brothers, 1955. Pp. 285. $5.00.

Philosophical Analysis: Its Development between the Two World Wars. By J. O. Urmson. New York, Oxford University Press, 1956. Pp. x, 203. $2.90. 18s.

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What They Believe: A Survey of Religious Faith among Groups of College Students. By G. Edwin Covington. New York, Philosophical Library, 1956. Pp. xvi, 109. $4.50.

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On the History and Method of Economics: Selected Essays. By Frank H. Knight. Chicago, University of Chicago Press, 1956. Pp. vii, 309. $6.00.

Education for Maturity. By Frederick Mayer and Frank E. Brower. Introduction by William Heard Kilpatrick. Washington, Public Affairs Press, 1956. Pp. viii, 155. $3.25.

The Life of Man with God. By Thomas Verner Moore. New York, Harcourt, Brace and Company, 1956. Pp. xiv, 403. $3.95.

The Self: Explorations in Personal Growth. Edited by Clark E. Moustakas. With assistance in editing Indian papers by Sita Ram Jayaswal. New York, Harper & Brothers, 1956. Pp. xviii, 284. $4.50.

The Transformations of Man. By Lewis Mumford. New York, Harper & Brothers, 1956. Pp. xviii, 249. $3.50.

The Social Dynamics of George H. Mead. By Maurice Natanson. Introduction by Horace M. Kallen. Washington, Public Affairs Press, 1956. Pp. x, 102. $2.50.

Sin and Science: Reinhold Niebuhr as Political Theologian. By Holtan P. Odegard. Yellow Springs, Ohio, Antioch Press, 1956. Pp. ix, 245. $3.00.

Poems from a Gentle Heart. By Elva Reh Parkhurst. Boston, Meador Publishing Company, 1956. Pp. 47. $2.00.

The Perkins Lectures. Pasadena, Fund for Adult Education, 1956. Pp. viii, 65.—A series of lectures by Dexter Perkins.

The Truth that Frees. The Aquinas Lecture, 1956. By Gerard Smith. Milwaukee, Marquette University Press, 1956. Pp. 96. $2.00.

The New Man: Christianity and Man's Coming of Age. The Alexander Love Lectures 1955. By Ronald Gregor Smith. New York, Harper & Brothers, 1956. Pp. 120. $2.50.

Preface to Empathy. By David A. Stewart. New York, Philosophical Library, 1956. Pp. 157. $3.75.

The History of Witchcraft and Demonology. By Montague Summers. New York, University Books, 1956. Pp. xxiii, 353. $6.00.

Classical Influences on English Prose. By J. A. K. Thomson. New York, The Macmillan Company, 1956. Pp. xiii, 303. $3.75.

Experiment and Theory in Physics. By Max Born. New York, Dover Publications, 1956. Pp. 44. $1.35 (cloth); $.60 (paper).

On God and Man: Selections from Institutes of the Christian Religion. By John Calvin. Edited by F. W. STROTHMANN. New York, Frederick Ungar Publishing Co., 1956. Pp. ix, 54. $1.75 (cloth); $.65 (paper).

The Origin of Species. By Charles Darwin. Edited and Abridged by Charlotte and William Irvine. New York, Frederick Ungar Publishing Co., 1956. Pp. ix, 134. $2.25 (cloth); $.95 (paper).

The Grand Inquisitor. By Fyodor Dostoevsky. With an Introduction by Anne Fremantle. New York, Frederick Ungar Publishing Co., 1956. Pp. xvi, 22. $1.75 (cloth); $.65 (paper).

Jesus. By Charles Guignebert. Translated from the French by S. H. Hooke. New York, University Books, 1956. Pp. xii, 563. $6.00.

The Principles of Mechanics. Presented in a new form. By Heinrich Hertz. New Introduction by Robert S. Cohen. New York, Dover Publications, 1956. Pp. xlvi, 274. $3.50 (cloth); $1.75 (paper).

The Creed of a Priest of Savoy. By Jean-Jacques Rousseau. Translated, with an Introduction, by Arthur H. Beattie, New York, Frederick Ungar Publishing Co., 1956. Pp. xii, 50. $1.75 (cloth), $.65 (paper).

An Essay on the Foundations of Geometry. By Bertrand A. W. Russell. With a new Foreword by Morris Kline. New York, Dover Publications, 1956. Pp. xxii, 201. $3.25 (cloth); $1.50 (paper).

Modes of Thought. Six Lectures delivered in Wellesley College, Massachusetts, and Two Lectures in the University of Chicago. By Alfred North Whitehead. New York, The Macmillan Company, 1938 and 1956. Pp. xi, 241. $3.75.

The Genesis of Plato's Thought. By Alban Dewes Winspear. New York, S. A. Russell, 1956. Pp. 390. $5.00.

NOTES

Friends and colleagues of Margaret Macdonald, who died in January 1956, feel that they would like their esteem for her work as a writer and teacher to take a permanent form. Her own money she left to Bedford College, for the Susan Stebbing Memorial Fund from which the Susan Stebbing Studentship is financed, and it has therefore been suggested that it would be appropriate, in the light of her tastes and interests, for the memorial to take the form of a painting which would hang in Bedford College where she had been both student and teacher. Those who would like to contribute are asked to send their donations to Professor H. B. Acton, Bedford College, Regent's Park, London, N.W.1, England.

The Librarian of the Johns Hopkins University would be grateful to any owners of Royce manuscripts who would be willing to contribute them to the Royce archives in that library. Articles, letters, speeches, and any occasional or fugitive material would be welcome. Royce was the first graduate student in philosophy to take his doctorate at the Johns Hopkins University and it is desired to gather together evidence of the development of his thinking before it is too late. Informal writings, such as letters, would be especially valuable. The manuscripts should be sent to The Librarian, The Johns Hopkins University, Baltimore 18, Maryland.

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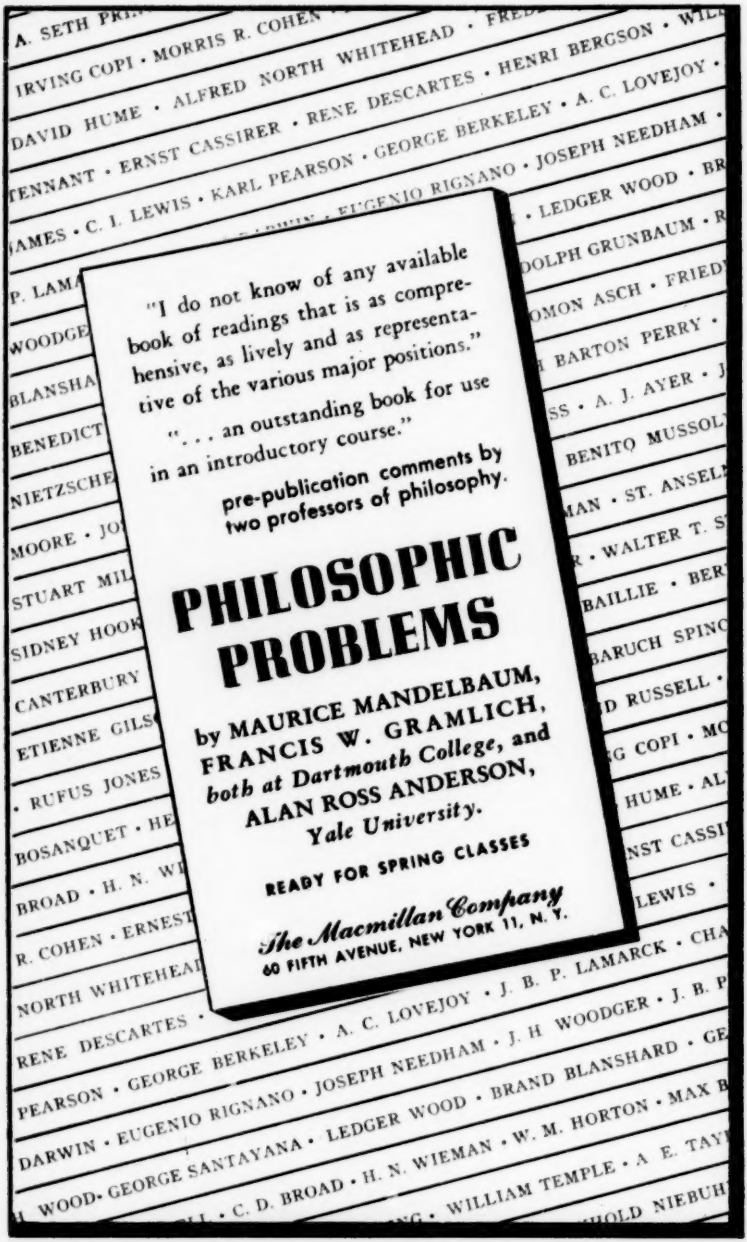
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